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AND ALSO

Some late Diſcoveries near the NORTH POLE;

WITH

OBSERVATIONS Aſtronomical, Philoſophical, and Geographical.

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"And light us deep into the Deity."

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☞ With this Work is preſented, three neat Philoſophic and Aſtronomic Inſtruments; the one being a moveable Orrery, ſhewing the diurnal and annual Motion of the Earth, with the Moon moving in its Orbit round the Earth, &c. &c. with a Longitude Dial, ſhewing the Longitude, Time of Day and Night, and Diſtance of every capital Place in the known World and Planiſphere; deſcribing the Time of the Sun's Riſing and Setting, Climates, the Length of the Twilights in every Part of the Globe.

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Of whom may had,

NEW and ELEGANT AMUSEMENTS to the LADIES of GREAT BRITAIN.

TO THE

BISHOP

OF

OSNABURGH.

May it pleaſe your HIGHNESS,

THE marks of Genius, and of true Greatneſs, ſo diſcoverable in your Royal mind, afford us every pleaſing hope, that your Highneſs will one day become a generous Patron of the Sciences and Liberal Arts. Impreſſed with this opinion, the Author of the following Treatiſe preſumes to lay it at your Royal feet: Geography, moſt illuſtrious PRINCE, claims a diſtinguiſhed rank amongſt the Sciences; to this we are indebted for the pleaſing knowledge we acquire of that Globe, and its materials, which we inhabit. To this we are beholden for a view of thoſe Seas, Lakes, and Iſlands, which ſerve no leſs for utility, than to embelliſh and diverſify this terraqueous Nurſery for Man: Inſomuch, that it is impoſſible for a thinking mind to poſſeſs only a ſuperficial knowledge of Geography, without being ſtruck with a veneration for that Creator who ſpoke this World of Wonders into being. Such then being the importance of this Science to Man in general, how neceſſary it is for a Prince to be intimately acquainted with it I will not preſume to ſuggeſt; your Highneſſes Preceptors, will anticipate every thing I can urge upon the ſubject, and cauſe that eager deſire of knowledge you diſplay to be gratified with intellectual endowments of the ſublime kind. You are intereſted, moſt amiable PRINCE, in a conſiderable part of the Globe; the welfare of Europe is blended with that of your illuſtrious Family; a Political diſaſter happening to Europe would affect the happineſs of your Royal Houſe no leſs than a convulſive tremor of the Earth would give a ſhock to the inhabitants on its ſurface; ſo connected, therefore, with this lower World, your Royal Highneſs cannot acquire too accurate a knowledge of a Science ornamental to you as a Prince, and neceſſary to point out the commercial ſyſtem England ſhould purſue. If the following Treatiſe, Sir, ſhould afford the ſmalleſt aid to your Highneſs; if by embelliſhing the ſubject, and diveſting it of thoſe technical terms, ſo apt to diſcourage Youth, the path to Knowledge ſhould be be rendered eaſy to your Highneſs, the Author has his reward; and if his prayers could prevail to heaven, they would be, that the thorny path of Life, as well as Knowledge, might, for the benefit of all who ſtand in Relation to your Royal Highneſs, be ſtrewed with Roſes.

I have the Honour to be,

May it pleaſe YOUR HIGHNESS,

Your Highneſs's devoted

And obliged humble Servant,

S. HARRINGTON.

INTRODUCTION.

MAPS, although exceeding important and very common, are but little underſtood. It has ever been the misfortune of thoſe who have profeſſed to lay down Rules for the attainment of them, to leave their inſtructions enveloped with difficulties, which if not utterly inſuperable, at leaſt perplex and diſcourage the learner from proceeding. To obviate every objection, and to remove thoſe difficulties which hath ſo long blocked the path of this uſeful Science, and retarded, if not wholly impeded, the Pupil in his progreſs, was the chief view in compiling the ſubſequent little Treatiſe; my preſent deſign chiefly regards thoſe Youth of both Sexes, who have a taſte for *Geography*, and are willing to attain the firſt principles thereof in the moſt natural and eaſy manner; now the firſt ſteps which Art ſupplies for advancing in this Science are *Maps*.

It is no wonder that the Science of *Geography* has always been held in the higheſt regard, and looked upon as the moſt eſſential and polite part of Education. For as nothing leſs is the object thereof than the *terraqueous Globe* which Providence has aſſigned for the habitation of the human race, and the ſcene of all their actions, what can more deſerve their notice and claim their firſt regard and knowledge than their native Earth? What can be more neceſſary than to look about them and ſurvey the various Scenery where they are deſtined to act their future parts of life?—What more becoming a rational Being, than to know where he is, and how he ſtands related to and connected with others of his Species on different and diſtant parts of the World? When we conſider the Magnitude, Figure, and Dimenſions of the Earth; the diviſions thereof into Land and Water; the various forms and phænomena of each; the diſtribution of Land into original Nations, Countries, and Kingdoms; and each Nation particularized by different Languages, Complexions, Manners, Cuſtoms, Governments and Commerce; I ſay, when all this and much more is conſidered, it muſt be looked upon as a ſtrange kind of indolence and ſupineneſs in us not to have the curioſity of enquiring into and ſatisfying ourſelves in regard to ſuch Notions, Characters, and Subjects, as not only naturally give pleaſure to the mind, but are intimately related to our very Nature, Situation, and Fortune in Life, that diſtinguiſh Man from the prone and irrational Animal; that elevate and claſs us above the rude and unthinking Vulgar; and conſtitute that part of Erudition, which above all others characterizes the *Gentleman* and the *Scholar*. It is a Study both entertaining and uſeful to Ladies, as well as to Gentlemen, and to all thoſe who are bred up to the learned profeſſions. The *Fair Sex* may intermingle theſe Amuſements with the operations of the Needle and the knowledge of a domeſtic life. In a word, this uſeful Science has ever been held in the higheſt eſtimation in the moſt refined Courts and politeſt Nations in the world, and is honoured at this time with peculiar attention by ſeveral of the younger part of our preſent illuſtrious Royal Family. But as the Eulogium of *Geography* has been oftentimes the ſubject of abler Pens, and as it is a Science every one knows full well the conveniency and neceſſity of, I ſhall deſiſt from enlarging on this head, and proceed to obſerve the beſt method by which this uſeful part of Knowledge may be inſtilled into the minds of Youth, which I ſhall venture to affirm is by means of *Maps*, or the *Terreſtrial* and *Celeſtial Globes*, which are a kind of moveable Maps.

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A NEW INTRODUCTION TO THE KNOWLEDGE AND USE OF MAPS, &c.

SECTION I.

Of Maps in General.

MAPS are a kind of Pictures which ſhould accurately repreſent all the different parts of our Earth, and is an invention of ſuch great importance, that there is ſcarce any thing for which the world are more indebted to the ſtudies of the ingenious—By the aſſiſtance of Maps we at home can with pleaſure take a moſt entertaining Survey of all the ſeveral Empires, States, and Kingdoms in the known World, with their Bearings, Climates, Diſtance and Extent: What Seas or Rivers ſurround, or are near them; as alſo their particular Provinces, Cities, Towns, and other remarkable places, with their Capes, Harbours, &c.

We thus from our ſtudies are enabled to view all the world before us in minature; can meaſure the exact diſtance from all the different parts of the Earth; can diſcover what parts thoſe people inhabit who live under the Equator, vulgarly called *under the Line*. As alſo thoſe under the Tropics and Poles. As likewiſe the temperature of thoſe different Climates, whether hot, cold, or temperate, and will farther deſcribe to us thoſe uncheary Frigid Zones, where the mountains are perpetually covered with ſnow, and the Seas a vaſt plain of ice; we can inſtantaneouſly remove ourſelves from this dreary ſcene, and in the Torrid Zone diſcover thoſe hot Countries where the Sun is pouring down his reſulgent light, and that exceſſive heat, which diſcolours the ſcorched inhabitants, and by his bright preſence makes a perpetual Summer; and laſtly, we may view our more happy Temperate Zone, where the beautiful viciſſitudes of Summer and Winter, occaſion thoſe agreeable delightful variations conducive to our health, profit and pleaſure.—But to perform all this by the uſe of Maps was not accompliſhed in one generation; it was not one age could bring this great ſcience to any tolerable perfection.—But ſince the vaſt extent and increaſe of Commerce, with the great improvements in Navigation,

vigation, we have found out ſuch infallible methods by which our Maps may be perfectly delineated and truly corrected, ſo as moſt faithfully to anſwer all the above purpoſes.—But as the uſe of Maps is a part and moſt eminently connected with that inſtructive Science *Geography*, it will therefore be neceſſary to explain ſome of the moſt material terms uſed in that Science, which will not only extend the ideas, but alſo tend greatly to facilitate our improvement.—We ſhall begin with a deſcription of the *Zones*.

S E C T. II.

Of the Zones.

A *Zone* ſignifies a Belt or Girdle; but here is to be underſtood a certain quantity of Land, included by one or two Parallels Now the number of Zones, Geographers have divided the Globe into, are five; of which there are two Temperate, two Frigid or Frozen, and one Torrid.

The *Torrid Zone* is that ſpace of earth contained betwixt the two * Tropics, viz. *Cancer*

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* The progreſſive and oblique motion of the Earth, occaſions the Sun (which is a fixed body) in our Summer to ſhine more in the North parts of the world, and in Winter ſeems to withdraw and favour the ſouthern inhabitants of the globe with his influence. In *September* and *March* the Sun

Cancer and *Capricorn*, being in breadth 47 degrees, which is 3290 Engliſh miles; upon this Zone or tract of earth, lies moſt part of *Africa*, a great part of *South America*, alſo ſeveral Iſlands, as *Java*, *Sumatra*, St. *Thomas*, &c. The antients, both Philoſophers, Divines and Poets, counted this Zone altogether uninhabitable, by reaſon of the extream heat, and therefore termed it *intemperate*, but later diſcoveries have proved to the contrary. The inhabitants of this Zone are called *Amphiſcians*, becauſe they have their ſhadows both ways at Noon, that is, one part of the year it is towards the North, and the other part toward the South.

The *Temperate Zones* are thoſe ſpaces of Earth included betwixt the Tropics and *Polar* Circles; the North temperate Zone being that portion of earth contained betwixt the Tropic of *Cancer* and *Arctic* Circle. The South temperate Zone, is that part or portion of Earth, bounded by the Tropic of *Capricorn* and *Antarctic* Circle; each of theſe Zones are in breadth 43 degrees, that is, 3010 miles. In the

Sun is exact betwixt the Poles, over the middle of the Earth, making it by this poſition equal day and night all over the world. The Sun is then ſaid to be in the *Equator*, and in *June* and *December* is at his *greateſt diſtance* from the *Equator*. This his fartheſt extremity either North or South of the *Equator* is called the TROPICS.

Northern temperate Zone, lies almoſt all *Europe* and the North of *Africa*, as alſo a conſiderable part of *Aſia* and *America*; the Southern temperate Zone is not ſo well known to us, it being far diſtant from our habitation. Theſe Zones are termed *temperate*, becauſe the Sun-beams being caſt obliquely, cannot create that exceſſive heat as they do where they fall perpendicular. They in ſome meaſure partake of the extremities of heat and cold, proceeding from the Torrid and Frigid Zones; thoſe that inhabit in theſe Zones are called *Heteroſcians*, becauſe their ſhadows are but one way.

The *Frigid* or *Frozen Zones* are thoſe two tracts of earth environed by the two Polar Circles; that encloſed by the Arctic Circle, is called the Northern Frigid Zone; the other encompaſſed by the Antarctic, is the Southern Frigid Zone, their Diameter is 47 degrees, which is 3290 Engliſh miles. Under the Northern Frigid Zone lies *Greenland*, *Lapland*, *Nova Zembla*, and part of the Tartarian Ocean; whether there is any land in the Southern Frigid Zone, is not as yet known to us that inhabit this part of the earth. The coldneſs of theſe Zones is cauſed from the very oblique falling of the Sun's rays upon the Earth's ſurface, from which his action is ſo ſmall, that the heat proceeding from him in the warmeſt day they there have, is ſcarce ſufficient to melt the congealed rocks of ice and ſnow. Thoſe that inhabit theſe parts of the earth, are called *Periſcians*, becauſe their ſhadows are thrown quite round them, they are under great inconveniences; Firſt, by reaſon of the extream cold they ſuffer; and ſecondly, becauſe their whole year is but one day and night; for when the Sun is once riſen, he ſets not again for half a year together, and when he ſets, riſes not again for as long a time.

SECT. III.

Of the Climates.

THE *Climates* are certain ſpaces of Earth, limited by two Parallels, diſtant from the Equinoctial toward each Pole. The difference betwixt the Zones and Climates, is this: The principal office of the Zones is to diſtinguiſh the quality of the air, in reſpect of heat and cold, and the alteration of ſhadows: But the office of the Climates is to ſhew the greateſt difference in the length of the days and nights, as alſo the variation in the riſing and ſetting of the Stars.

Thoſe that live under the Equator, have their day and night equal; but thoſe places that recede ſo far from the Equator, as to make the difference of the longeſt artificial day half an hour longer than it is, where the longeſt day is 12 hours and a half, there ends the firſt Climate, and there the ſecond begins; if therefore according to the encreaſe of days the Climates be reckoned, there will be 24 in each Hemiſphere, that is, in all 48, counting no farther than the Polar Circles; for the places in that Parallel of Latitude, coinciding with either Polar Circle, have their longeſt day above 24 hours long. Now Geographers have given names to ſeveral in the Northern Hemiſphere, and theſe names are taken from the moſt famous places, through which the parallel Circles paſs that bound them. As *Alexandria, Rhodes, Rome, Britain, &c.*

The Southern Climates are diſtinguiſhed by the words *oppoſite Alexandria, oppoſite Britain, &c.*

S E C T. IV.

The Properties of the ſeveral Inhabitants of the Earth.

THOSE people living juſt under the Equator, feel the greateſt heat, having two Summers, one in *March*, when the Sun paſſes the firſt part of *Aries*, the other in *September*, when he paſſes the firſt point of *Libra*; and has alſo two Winters, which are when he paſſes the firſt points of *Cancer* in *June*, and *Capricorn* in *December* for then the Sun is moſt remote from thoſe people, (though not ſo remote, but that their Winters are much hotter than our Summers ;) whence it is evident, their two Summers are our Spring and Autumn, and our Winter and Summer their two Winters ; their Noon-ſhades are thrown both to the North and South, and ſometimes directly under them, that is, they have none at all. Their artificial day is always juſt 12 hours long, they ſee the whole Phænomena of the heavens ; for all the planets and ſtars to thoſe inhabitants, do ariſe, paſs their Meridian, and ſet once in 24 hours.

Secondly, For thoſe who inhabit betwixt the Equinoctial and Tropic of *Cancer*, they have ſome ſeaſons as the former, viz. two Summers and two Winters ; for the Sun twice a year paſſeth their Zenith ; their Noon ſhadows are likewiſe thrown both to the North and South part of heaven, and ſometimes directly under them, their longeſt day is ſomething longer than 12 hours.

Thirdly, The Inhabitants under the Tropic of *Cancer*, *i.e.* the *Arabians*, *Moguls*, and a part of *Mexico*, &c have the Sun but once a year in their Zenith, and that is when he is in the firſt point of *Cancer*, they have but one

Summer and one Winter; their Noon ſhadow is always towards the North, except when he is juſt in the Tropic, and then there is none at all; their longeſt day is 13 hours 36 min long.

Fourthly, The people that inhabit betwixt the Tropic of *Cancer* and the *Arctic Circle*, *i.e.* the *Engliſh*, *Americans*, *French*, *Perſians*, *Ruſſians*, *Polanders*, &c. have the Sun never Vertical; their ſhadows are always thrown toward the North, and their artificial days is of all lengths, viz. from 13 hours 36 minutes to 24 hours.

Fifthly, Thoſe that have their Zenith in the *Arctic Circle*, that is, ſuch who live juſt upon that Circle, which are the inhabitants of *Siberia* and *Norway*, have the Pole of the Ecliptic juſt in their Zenith, and conſequently the Ecliptic coinciding with their Horizon, and therefore the Tropic of *Cancer* muſt be all above the Horizon, and the Tropic of *Capricorn* quite under the Horizon, ſo that the Sun being in the firſt point of *Cancer*, their artificial day is juſt 24 hours long, and their night but a moment, their ſhadow is caſt quite round them.

Sixthly, The people, i. e. the *Greenlanders*, &c. inhabiting betwixt the *North Pole* and *Arctic Circle*, have their Horizon cutting the Ecliptic in two points, and a certain portion of it equally diſtant from the firſt point of *Cancer* that never ſets, but remains always above the Horizon; whence it cometh to paſs, that all the time the Sun is paſſing this portion of the Ecliptic, they have continual day and no night, the length of which is more or leſs, according to the portion of the Ecliptic that never ſets, being about one month long when the ſaid portion is 30 degrees, two months when the ſaid portion is 60 degrees, or two ſigns, and ſo on: That is, the farther North, the longer day, till at laſt you come juſt under the Pole itſelf, where the whole year is but one day and night, each being half a year: In this poſition alſo, there is a certain portion of the Ecliptic, equidiſtant from the firſt point of *Capricorn*, that never riſes or comes above the Horizon, ſo that during the time the Sun is paſſing the ſaid portion, there is perpetual night to theſe inhabitants, their ſhadows are alſo projected quite round them.

Seventhly, As for thoſe people (if any be) inhabiting juſt under the Pole, they have the equinoctial coinciding with their Horizon, and have always but the Northern half of the Ecliptic above the Horizon, ſo that their year is but one natural day as before was hinted; for when the Sun paſſeth the firſt point of *Aries*, then to thoſe people he ariſes, and ſets not again till he paſſes the firſt point of *Libra*, which is half a year after, they never ſee no more than half the heavens at once, all the Southern Hemiſphere being totally obſcured from their ſight; their ſhadow is likewiſe caſt clear round them, the end of it projecting a concentric Circle.

SECT. V.

The Tropics and Equator.

WHAT we mean by the *Tropics* are thoſe parts of the Earth, which is ſituated 23½ degrees on either the North or South ſide, the Equator or middle of the world.—Thoſe Northward are *Arabia*, the *Mogul's Empire*, the *Havanna*, &c. Southward is *Madagaſcar*, *New Holland*, &c. (all which may be ſeen in the Circular Map,) thoſe who inhabit theſe parts, are ſaid to live under the Tropics.—In the above Map you will find them marked by two curved dotted Lines, and are the bounds of the Sun's progreſs. As that luminary does not extend further, either North or South, than theſe circles, which makes our longeſt day and ſhorteſt night; the one being called the Tropic of *Cancer*, which is the moſt

Northern.—The other the Tropic of *Capricorn*, and is the moſt Southern Tropic, the Sun being in the former the 21ſt of *June* makes Summer with us, and in the latter the 21ſt of *December*, which is our Winter.

The *Equator* is that middle ſpace of the Earth equal diſtant from both the North and South Poles; and is diſtinguiſhed in our Circular Map by a broad line, marked in this manner and extend directly acroſs the Map: all thoſe that inhabit theſe parts are extremely hot, and have no variation in their day or night, being always of an equal length, the Sun always riſing at ſix in the morning, and ſetting with them at ſix in the evening; this line alſo divides the Globe into the Northern and Southern Hemiſpheres, and diſtinguiſhes the Sun's yearly path into the Summer and Winter half years; it repreſents in the Heavens that very Line or Circle, which is the path of the Sun in thoſe two days in Spring and Autumn (*i. e.* about the middle of *March* and *September*) when the days and nights are of equal length.—Among all the Circles of the Globe, this is ſometimes eminently called, *The Line*, and paſſing over it at Sea is called by Sailors *Croſſing the Line.* The *Ecliptic* is that double Serpentine Line cutting the Equator in the middle, and is the Sun's annual or yearly path *.

S E C T. VI.

Explanation of the FRONTISPIECE, *being the Natural Deſcription of the* Earth *and* Waters, *as delineated on Maps in General.*

THE Earth may be divided into its Natural or its Political parts. The one diſtinction is made by the God of Nature who created it: The other by men who inhabit it.

The ſurface of Earth on which we dwell is made up naturally of two parts. Each of theſe Elements have their various parts

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* The *Ecliptic Line* repreſents that path in the heavens which the Sun ſeems to deſcribe by the Earth's annually revolving round it. It is divided into twelve equal parts, correſponding to the twelve months of the year. The names and *Characters* of theſe twelve ſigns, with the time of the *Sun's entrance* into each is as follows:

Aris.	*Taurus.*	*Gemini.*	*Cancer.*	*Leo.*	*Virgo.*
♈	♉	♊	♋	♌	♍
Mar. 20.	*Apr.* 20.	*May* 21.	*June* 22.	*July* 23.	*Aug.* 23.
Libra.	*Scorpio.*	*Sagitarius.*	*Capricornus.*	*Aquaris.*	*Piſces.*
♎	♏	♐	♑	♒	♓
Sept. 23.	*Oct.* 24.	*Nov.* 22.	*Dec.* 21.	*Jan.* 20.	*Febr.* 20.

and ſubdiviſions, which are as variouſly deſcribed on different Maps.

The Land is about one third of the whole ſurface, and is generally divided into the following parts, *i. e.* an *Iſland*, a *Continent*, a *Peninſula*, an *Iſthmus*, a *Promontory*, or a *Coaſt*. See a plain deſcription of this in the plate *Frontiſpiece*.

An *Iſland* is a country or portion of land incompaſſed about with Sea or other water, as *Great Britain*, *Ireland* in the Britiſh Seas; *Sicily*, *Crete*, *Cyprus*, &c. in the Mediterranean Sea; the Iſles of *Wight*; of *Angleſey*; of *Man*: as alſo *Madagaſcar* and *Japan*: There are alſo Iſlands in Rivers.

A *Continent*, properly ſo called, is a large quantity of Land in which many great Countries are joined together, and not ſeparated from each other by the Sea, ſuch are *Europe*, *Aſia*, *Africa*. This is ſometimes called the *Main-Land*.

A *Peninſula* is a part of Land almoſt incompaſſed with water, or which is almoſt an Iſland, except one narrow part, by which it is joined to the *Main-Land*: Such is the *Morea* which joins to *Greece*; ſuch is *Denmark*; as joining to *Germany*, and *Taurica Cherſoneſus* joining to *Little Tartary* near *Muſcovy*; and indeed *Africa* is but a large Peninſula joining to *Aſia*, as alſo *Jutland* at the top of *Germany*, and *Morea* in *Greece*.

An *Iſthmus* is a narrow neck of Land between two Seas, joining a Peninſula to the Continent, as the Iſthmus of *Darien* or *Panama*, which joins *North* and *South America*: The Iſthmus of *Corinth*, which joins the *Morea* to *Greece*: The Iſthmus of *Sues*, which joins *Africa* to *Aſia*.

A *Promontory* is a hill or point of land ſtretching out into the Sea: It is often called a *Cape*, ſuch is the *Cape of Good Hope*, and *Cape Verd* in the South of *Africa*; the *Land's End*, and the *Lizzard Point* are two Capes at the Weſt of *England*; *Cape Finiſterre* on the Weſt of *Spain*, &c.

A *Coaſt* or *Shore* is all that Land that borders upon the Sea, whether it be in Iſlands or Continents, as the Coaſt of *France*, the Coaſt of *Barbary*: Hence ſailing near the ſhore is called *Coaſting*.

That part of the Land which is far diſtant from the Sea is called the *Inland Country*: Theſe are the diviſions of the Land.

The Water is divided into Rivers or Seas.

A *River* is a ſtream of water which has uſually its beginning from a ſmall Spring or Fountain, whence it flows continually without intermiſſion, and empties itſelf into ſome Sea. But the word Sea implies a larger quantity of water, and is diſtinguiſhed into Lakes, Gulfs, Bays, Creeks, Straits, or the Ocean.

The *Ocean* or the *Main Sea* is a vaſt ſpreading collection of water, which is not divided or ſeparated by Lands running between: Such is the *Atlantick* or *Weſtern Ocean*, between *Europe* and *America*: The *Eaſtern* or the *Indian Ocean* in the *Eaſt-Indies*: The *Pacifick Ocean* or *South Sea*, on the Weſt ſide of *America*, &c.

Note, That various parts of this *Ocean* or *Main Sea*, that border upon the Land, are called by the names of the Lands which lie next to it: So the *Britiſh Sea*, the *Iriſh Sea*, the *Ethiopian Sea*, the *French* and *Spaniſh Seas*.

A *Lake* is a large place of water incloſed all round with Land, and having not any viſible and open communication with the Sea: Such are the *Caſpian Sea*, or *Lake* in *Aſia*; the *Lake Zaire* in *Africa*, (as ſome Maps deſcribe) and many others there are in *Europe* and *America*, and eſpecially in *Sweden* and *Finland*, and on the Weſt of *New England*: Such alſo is the Lake or Sea of *Tiberias* in the Land of *Canaan*, and the *Dead Sea* there, which we read of in Scripture.

A *Gulf* is a part of the Sea that is almoſt incompaſſed with Land, or that runs up a great way into the Land.

If this be very large it is rather called an *Inland Sea*: Such is the *Baltick Sea* in *Sweden*,

den, and the *Euxine Sea* between *Europe* and *Aſia*; the *Ægean Sea* between *Greece* and *Leſſer Aſia*; and the *Mediterranean Sea* between *Europe* and *Africa*, which is often in the Old Teſtament called the *Great Sea*.

If it be a leſs part of the Sea thus almoſt incloſed between Land, then it is more uſually called a Gulf or Bay: Such is the Bay of *Biſcay* between *France* and *Spain*: Such is the *Gulf of Venice* between *Italy* and *Dalmatia*: The *Arabian Gulf*, or the *Red Sea* between *Aſia* and *Africa*: The *Perſian Gulf* between *Arabia* and *Perſia*: The Gulf or Bay of *Finland* in the *Baltick Sea*.

If it be but a very ſmall part, or as it were an Arm of the Sea that runs but a few miles between the Land, it is called a Creek, a Haven, a Station, or a Road for ſhips; as *Milford-Haven* in *Wales*; *Southampton-Haven* in *Hampſhire*, and many more in every maritime Country.

A *Strait* is a narrow part of the Ocean lying between two ſhores, whereby two Seas are joined together, as the *Sound*, which is the paſſage into the *Baltick Sea* between *Denmark* and *Sweden*: The *Helleſpont* and *Boſphorus*, which are two paſſages into the *Euxine Sea*, between *Romania* and the *Leſſer Aſia*: The *Straits of Dover*, between the *Britiſh Channel* and the *German Sea*; and the *Straits of Gibraltar* between the *Atlantick* and the *Mediterranean*, though the whole *Mediterranean Sea* is ſometimes called the *Straits*.

If we compare the various parts of the Land with thoſe of the Water, there is a pretty analogy or reſemblance of one to the other. The deſcription of a Continent reſembles that of the Ocean, the one is a vaſt tract of land, as the other is of water. An Iſland incompaſſed with water reſembles a Lake incompaſſed with land A Peninſula of land is like a Gulf or Inland Sea. A Promontory or Cape at land is like a Bay or Creek at Sea; and an Iſthmus, whereby two lands are joined, has the ſame relation to other parts of the Earth as a Strait has to the Sea or Ocean.

Let us now take notice by what Figures the various parts of Land or Water are deſcribed in a Map, and in in what manner they are repreſented. *See the Map in the Frontiſpiece.*

Sea is generally left as an empty ſpace, except where there are Rocks, Sands, or Shelves, Currents of Water, or Wind deſcribed.

Rocks are ſometimes made like little pointing things ſticking up ſharp in the Sea. *Sands* or *Shelves* are denoted by a great heap of little points placed in the ſhape of thoſe Sands, as they have been found to lie in the Ocean, by ſounding or fathoming the depths. *Currents of Water* are deſcribed by ſeveral long crooked parallel ſtrokes imitating a Current. The *Courſe of Winds* is repreſented by the *heads* of *Arrows*, pointing to that Coaſt toward which the wind blows.

The *Land* is divided or diſtinguiſhed from the Sea by a thick ſhadow, made of ſhort ſmall Strokes to repreſent the Shores or Coaſts, whether of Iſlands or Continents, &c. and it is uſually filled with names of Kingdoms, Provinces, Cities, Towns, Mountains, Foreſts, Rivers, &c. which are deſcribed in this manner, *viz.*

Kingdoms or *Provinces* are divided from one another by a row of ſingle points, and they are often painted or ſtained with diſtinct colours. *Cities* or *Great Towns* are made like little houſes with a ſmall circle in the middle of them. *Leſſer Towns* or *Villages* are marked only by ſuch a ſmall circle. *Mountains* are imitated in the form of little riſing hillocks. *Foreſts* are repreſented by a collection of little Trees. *Small Rivers* are deſcribed by a ſingle, crooked, waving Line; and *larger Rivers* by ſuch a waving or curling double Line made ſtrong and black. The mouths of large Rivers, where they empty themſelves into the Sea, are repreſented ſometimes

times as currents of Water, by ſeveral parallel crooked Lines.

I ſhould add this alſo, That in large Maps you find the *Mariner's Compaſs* figured in ſeveral parts, and the Lines of it are drawn out to a great length toward all parts of the world, on purpoſe to ſhew how any part of the Earth or Sea ſtands ſituated with regard to any other part; and this is called its Bearing, by which you may know what places bear Eaſt, Weſt, North or South from the place where you are, or at what other intermediate points of the compaſs they lie. The North is generally deſcribed by a *Flower-de-Luce*, and the Eaſt frequently by a Croſs.

Maps are generally ſo formed as to have the North juſt ſtanding before the face: Then the Eaſt is at the right hand, and the Weſt at the left: And thus uſually the names and words are written to be read from the Weſt to the Eaſt. This is obſerved in large Maps, and it ſhould be the ſame in ſmall ones; for when a Map of a Country is drawn in any other form, ſo that the North does not lie juſt before us, and the Eaſt to our right hand, it gives great confuſion to the learner, and ſometimes confounds the eye and imagination even of perſons ſkilled in Geography.

SECT.

SECT. VII.

The Political Diviſions of the Earth, as repreſented on Maps.

HAving finiſhed the *Natural Diviſions of the Surface of the Earth*, we come now to conſider how it is divided Politically by Men who inhabit it.

In this ſenſe it is diſtinguiſhed into four quarters, into Empires, Kingdoms, States, Commonwealths, Principalities, Dukedoms, Provinces, Counties, Cities, Towns, Villages, *&c.*

The *Earth* is firſt divided into four chief parts or quarters, which are called *Europe*, *Aſia*, *Africa*, and *America*.

Europe is divided from *Africa*, and bounded on the South ſide by the *Mediterranean Sea*, On its Eaſtern ſide it is divided from *Aſia* by a Line drawn on the Eaſt ſide of *Candia* or *Crete*, paſſing up the *Ægean Sea*, and through the *Propontis* into the *Euxine* or *Black Sea*, and from thence through the Sea of *Zabaique* by the River *Don* or *Tanais* and thence through *Muſcovy*, (as ſome will have it) to the River *Oby*, running into the Northern Ocean. It is alſo bounded on the Weſt ſide by the *Weſtern* or *Atlantick Ocean.*

Aſia is alſo bounded on the North by the Northern frozen Seas: On the South by the *Indian Ocean*: On the Eaſt it includes *China* and the Oriental Iſlands: But on the North-eaſt its bounds are unknown, for Travellers have not yet been able to determine whether thoſe Eaſtern parts of *Great Tartary* may not be joined to ſome unknown parts of *North America.*

Africa is a large Peninſula joining to *Aſia* by a little neck of Land at *Egypt*, bounded on the North by the *Mediterranean Sea*: On the Weſt by the *Atlantick* and *Ethiopic Oceans*: On the North-eaſt by the *Red Sea*; and on the South and Eaſt by the *Southern* and *Indian Oceans.*

America was unknown to the Antients till found out by *Chriſtopher Columbus*, above two hundred years ago. It is called in general the *Weſt-Indies.* It lies almoſt three thouſand leagues to the Weſtward from *Europe* and *Africa* on the other ſide of the *Atlantick* and *Ethiopick Seas*: It is made up of two large Continents, divided by a narrow neck of Land into two parts; the one is called *North America* or *Mexicana*, the other *South America*, or *Peruana.*

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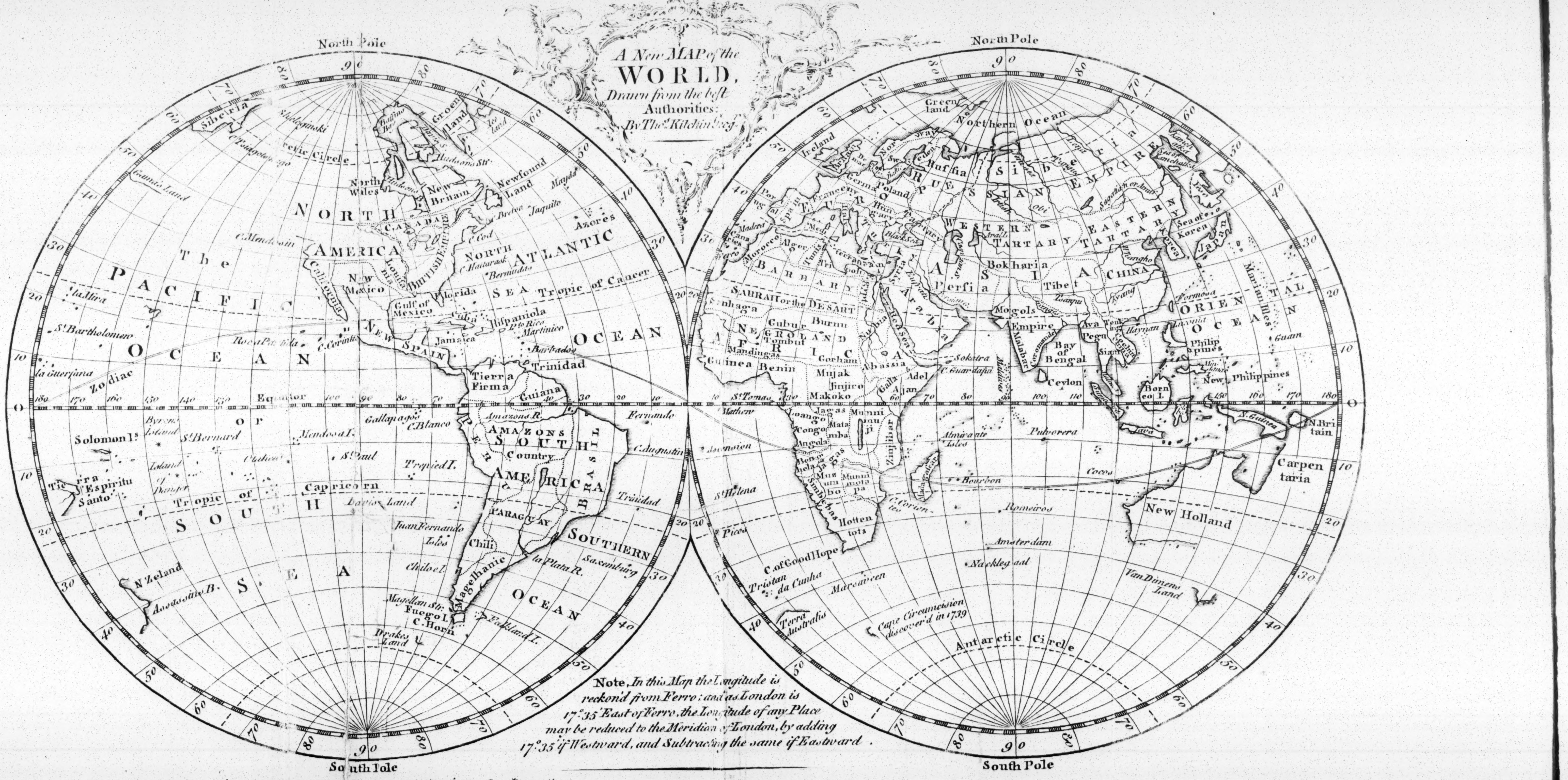

A New MAP of the WORLD,

Drawn from the best Authorities:

By Thos. Kitchin Geog.

Note, *In this Map the Longitude is reckon'd from Ferro; and as London is 17°. 35' East of Ferro, the Longitude of any Place may be reduced to the Meridian of London, by adding 17°. 35' if Westward, and Subtracting the same if Eastward.*

N.B. all those places in the Southern Hemisphere mark'd with a Star are the New Discoveries made by Mr. Banks & Dr. Solander in the Years 1769 1770 & 1771.*

Price 1s. 6d.

SECT. VIII.

Of Circular Maps.

IN the Circular Map of the World, as before us, we are to ſuppoſe the Globe cut in halves, about the firſt Meridian at the Iſland of *Ferro*, which then ſhews in two Circles, the ſituation or poſition of the four Quarters of the World. That Circle towards the right hand containing *Europe*, *Aſia*, and *Africa*, with the Iſlands thereto belonging, and that towards the left, hath in it *America* with the Iſlands appertaining to it. – The large outermoſt circles bounding the projections, repreſent the Braſs, Meridian as on the terreſtrial Globe. — The top and bottom are the North and South Poles, and the Curve Lines uniting there are the other Meridians, by ſome called Hour-circles, there being 24 of them, which all paſs under the brazen Meridian in one day, or 24 * hours, the Globe of the Earth making one revolution upon its own Axis in that time. Thoſe Meridian-lines are alſo called *Circles of Longitude*, all who inhabit under theſe lines have the ſame Longitude, and are the ſame diſtance Eaſt or Weſt from *Ferro* (or any other Cape or firſt Meridian). The other curved lines which run from Eaſt to Weſt, croſſing the Longitude lines are *parallels of Latitude*, that is, all around the Globe are equally diſtant from the Equator, and conſequently all thoſe who inhabit under one of theſe Circles, muſt have the ſame Latitude, and are the ſame diſtauce from the Equator, or middle of the earth. The Circumference of theſe circles is divided into four quarters: Each marked with 90 degrees, beginning from the Equator, and proceeding towards the Poles. Theſe figures or numbers ſhew the Latitude of every place on the Earth, or its diſtance from the Equator, and at every 10 degrees, there is a parallel of Latitude drawn on purpoſe to guide and direct the eye in ſeeking the Latitude of any place. Thus it is evident, that from the Equator to either Pole, we count the Latitude; if towards the North, or upper end of the Map, we call it *North Latitude*; and if towards the South, or lower end of the Map, we call it *South Latitude*.—Hence it appears that

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* For though the Terreſtrial Globe is uſually treated of according to appearances, as if the Sun, Moon and Stars roſe every day in the Eaſt, and ſet in the Weſt, it is generally known that the Earth turns round upon its own Axis from Weſt to Eaſt every 24 hours, which occaſions thoſe appearances.

Longitude is nothing more than the diſtance one place is from another Eaſt or Weſt; and *Latitude* the diſtance of one place from another either North or South of the Equator.—The *Equator* is that ſtraight line running acroſs all the Meridians at equal diſtances from the Poles.—The *Equator* of of each Hemiſphere is divided into 180 parts, which make 360 in the whole: And the ſeveral *Meridians* or *lines of Longitude*, cutting the Equator at every 10 degrees, guide and direct the eye to find the Longitude of any place required.—The two Tropics of *Cancer* and *Capricorn* are thoſe dotted lines drawn at their proper diſtances of 23½ degrees from each ſide the Equator, and the two *Polar* Circles, *i. e.* the *Arctic* and the *Antarctic* are thoſe dotted lines, near the Poles, or Axis of the World, being diſtant from each of theſe Poles 23½ degrees.—The *Ecliptic* is that ſmall double *Serpentine line*, one half of which bends upwards from the *Equator* to the *Tropic* of *Cancer*, and the other half downwards to the *Tropic* of *Capricorn*, and is the path of the Sun from which that luminary never varies.—You will find *New Spain*, *Barbados* and *Bourbon* under the * *Ecliptic* in the *Circular*

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* The Climates or different temperature of Countries are to be judged from their remoteneſs or vicinity to the *Ecliptic*, which is the Sun's invariable path.

Map. – *Sumatra*, *Guinea*, Port of *Peru*, and the *Amazons* Country under the *Equator*—*New Holland*, *Davis's Land*, and the *Great South Sea* * near the *Tropic* of *Capricorn*.—The *Gulf of Mexico*, *Cuba*, *Arabia*, and *Mogul's Empire* near the *Tropic* of *Cancer*; near the *Arctic* Circle you will find *Greenland*, and the *Antarctic* Circle *Drake's Land*. But from an accurate ſurvey of the Map, you will find all the *lines* and the ſeveral *Countries* deſcribed in their proper diſtances and ſituations juſt as upon the Globe itſelf; and this view will give you a better idea than all the verbal Deſcriptions in the World.—It may be obſerved, that Globes are formed by thoſe Circular Maps, which for this purpoſe are neatly paſted on hollow Balls, which make thoſe uſeful entertaining inſtruments called, the *Terreſtrial* and *Celeſtial Globes*; upon theſe Circular, as alſo the Square Maps, many uſeful curious and diverting problems may be performed. —But it is impoſſible to underſtand either *Globes* or *Maps*, without ſome knowledge of *Longitude* and *Latitude*, which is the very foundation of *Geography*. I ſhall therefore endeavour as it is of great moment to explain the uſe and meaning of thoſe important meaſures.

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* It is generally believed, that there are many *large Tracts* of Land towards the *South Pole*, which at preſent we know nothing of, and may be reſerved by *Providence* for future diſcovery.

SECT. IX.

Of Longitude.

THE Ancients conſidered the length of the *then* known parts of the Earth from *Eaſt* to *Weſt* was much greater than from *North* to *South*, for which reaſon the former of theſe was called *Longitude*, and the latter *Latitude*.—Moſt nations begin to reckon the *Longitude* from their own Metropolis, or principal City, as the French from *Paris*, the Engliſh from *London*, *&c.* The ancients began to reckon their *Longitude* from * *Ferro*, one of the *Canary* Iſlands, as in our Circular Map; but all this is matter of choice and cuſtom, not of neceſſity;

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* The reaſon why the Ancients in general made *Ferro* their firſt Meridian was, becauſe they ſuppoſed all beyond it Weſtward to be an immenſe Ocean without any land, nor dared they venture to inform themſelves; but as Science increaſed, navigation improved, until ſufficient reſolution and judgment was acquired to enable our Sailors to penetrate through the Atlantic Ocean, and thus diſcovered *America*.

ceſſity ; and now in general all our modern Maps, begin their *Longitude* from *London*— There are two ways of reckoning *Longitude*, *viz.* by *time*, and by *degrees*, it will be therefore proper to explain the utility of a correct *Time-piece.*—A *Degree* in *Longitude* being four minutes in time, therefore by having the *Longitude* we have the time, a watch that is ſet to time at *London* would be 16 minutes too faſt at *Madrid*, as it lies to the *Weſt* of the Meridian of *London*; and *Vienna* being 16 degrees and 20 minutes to the *Eaſt* of the Meridian of *London*; conſequently a watch ſet at *London* would be one hour and five minutes too ſlow at *Vienna*. —There is ſtill a more eaſy method of defining *Longitude*, which is always reckoned as before obſerved, from *Eaſt* to *Weſt*, as it implies the length of the Earth from *Eaſt* to *Weſt*.—Thus we will ſuppoſe ourſelves travelling from *London* to *Dover*, which is almoſt due *Eaſt* of *London*; we begin to count the miles as we travel, and reckon them from *London* (as our firſt Meridian, or place we ſet out from) having proceeded on our journey as far as *Rocheſter*, which is about 30 miles Eaſtward of *London*, (remembering that 60 miles is one degree,) therefore we may now ſay our *Longitude* is half a degree ; it means that we are thirty miles from *London*, our firſt Meridian: we proceed on to *Barham Downs*, a little beyond *Canterbury*, which is about 60 miles; here it may be ſaid that we are one degree *Eaſt Longitude* from our firſt Meridian (*London*): Had the journey been to *Briſtol*, *&c.* which is Weſt, it would have been called *Weſt Longitude*.

But had we journeyed towards *York*, we muſt not then think of *Longitude*, that being only reckoned from Eaſt to Weſt, and *Latitude* from North to South, therefore *Yorkſhire* being ſituated North of *London*, we only reckon the *Latitude*, and being Northward is for that reaſon called *North Latitude* *.

But for the ſatisfaction of the curious, and farther improvement of the Learner, I will endeavour particularly to explain what in a more comprehenſive ſenſe is meant by *Longitude*.—The *Longitude* of any place (as before obſerved) is its diſtance *Eaſt* or *Weſt* from any other given place, and what we want is a method of finding out at Sea, how far we are got to the Eaſtward or Weſtward of the place we ſailed ceſſity; and now in general all our modern Maps, begin their *Longitude* from *London*—There are two ways of reckoning *Longitude*, *viz.* by *time*, and by *degrees*, it will be therefore proper to explain the utility of a correct *Time-piece.*—A *Degree* in *Longitude* being four minutes in time, therefore by having the *Longitude* we have the time, a watch that is ſet to time at *London* would be 16 minutes too faſt at *Madrid*, as it lies to the *Weſt* of the Meridian of *London*; and *Vienna* being 16 degrees and 20 minutes to the *Eaſt* of the Meridian of *London*; conſequently a watch ſet at *London* would be one hour and five minutes too ſlow at *Vienna*. —There is ſtill a more eaſy method of defining *Longitude*, which is always reckoned as before obſerved, from *Eaſt* to *Weſt*, as it implies the length of the Earth from *Eaſt* to *Weſt*.—Thus we will ſuppoſe ourſelves travelling from *London* to *Dover*, which is almoſt due *Eaſt* of *London*; we begin to count the miles as we travel, and reckon them from *London* (as our firſt Meridian, or place we ſet out from) having proceeded on our journey as far as *Rocheſter*, which is about 30 miles Eaſtward of *London*, (remembring that 60 miles is one degree,) therefore we may now ſay our *Longitude* is half a degree; it means that we are thirty miles from *London*, our firſt Meridian: we proceed on to *Barham Downs*, a little beyond *Canterbury*, which is about 60 miles; here it may be ſaid that we are one degree *Eaſt Longitude* from our firſt Meridian (*London*): Had the journey been to *Briſtol*, *&c.* which is Weſt, it would have been called *Weſt Longitude*.

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* *Longitude* and *Latitude* is ſeldom talked of, when we are travelling by land, being terms more accommodated to long voyages by Sea, but is inſerted in the above manner for the more eaſy comprehenſion of our younger readers.

But had we journeyed towards *York*, we muſt not then think of *Longitude*, that being only reckoned from Eaſt to Weſt, and *Latitude* from North to South, therefore *Yorkſhire* being ſituated North of *London*, we only reckon the *Latitude*, and being Northward is for that reaſon called *North Latitude* *.

But for the ſatisfaction of the curious, and farther improvement of the Learner, I will endeavour particularly to explain what in a more comprehenſive ſenſe is meant by *Longitude*.—The *Longitude* of any place (as before obſerved) is its diſtance *Eaſt* or *Weſt* from any other given place, and what we want is a method of finding out at Sea, how far we are got to the Eaſtward or Weſtward of the place we ſailed from: The application of a *Time-keeper* to this diſcovery is founded upon the following principles.—The Earth's ſurface is divided into 360 equal parts (by imaginary lines drawn from North to South) which are called *degrees of Longitude*.—The Earth's daily revolution Eaſtward round its own Axis is performed in 24 hours; conſequently in that period each of thoſe imaginary lines or degrees become ſucceſſively oppoſite to the Sun, which makes the noon or preciſe middle of the day at each of thoſe degrees; and it muſt follow, that from the time any one of thoſe lines paſſes the Sun till the next paſſes, muſt be juſt 4 minutes; for 24 hours (or 1440 minutes) being divided by 360 will give that quantity.—So that for every *degree of Longitude*, we ſail Weſtward it will be noon with us, 4 minutes the later, and for every degree Eaſtward 4 minutes ſooner, and ſo in proportion for any greater or leſs quantity.—Now the exact time of the day at the place, where we are, can be aſcertained by well known and eaſy obſervations of the Sun, if viſible for a few minutes at any time, from his being 10 degrees high till within an hour of noon, or from an hour afternoon: If therefore at any time when ſuch obſervation is made, a *Time-keeper* tells us at the ſame moment what o'clock it is at the place we ſailed from, our *Longitude* is clearly diſcovered.—For example, ſuppoſe we ſail from *London* exactly at 12 o'clock at noon (at which time the Sun is our Meridian) and proceed by compaſs till after ſome days; we wiſh to know our *Longitude*, we therefore look at our Time-piece, and find that it is exactly 10 o'clock in the morning; but by obſerving the Sun we diſcover it is noon, or preciſely 12 o'clock; that luminary then being due South, or Meridian heighth, and conſequently at that place makes it mid-day, or 12 o'clock.—The Time-piece at this inſtant making it only 10 o'clock in the morning; and the Sun proving it to be 12 o'clock, makes two hours difference between the Sun and Time-keeper, and ſhows that we are two hours * *Eaſtward* of *London*, or 30 degrees *Eaſt Longitude*, which is equal to 1800 miles (reckoning ſixty miles to a degree).—The difficulty which formerly aroſe in truly aſcertaining the *Longitude*, was occaſioned by the irregularity of our watches and time-keepers, which is now much remedied by that excellent Time-piece contrived by Mr. *Harriſon*, for which his labours were liberally rewarded by the government.

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* *Longitude* and *Latitude* is ſeldom talked of, when we are travelling by land, being terms more accommodated to long voyages by Sea, but is inſerted in the above manner for the more eaſy comprehenſion of our younger readers.

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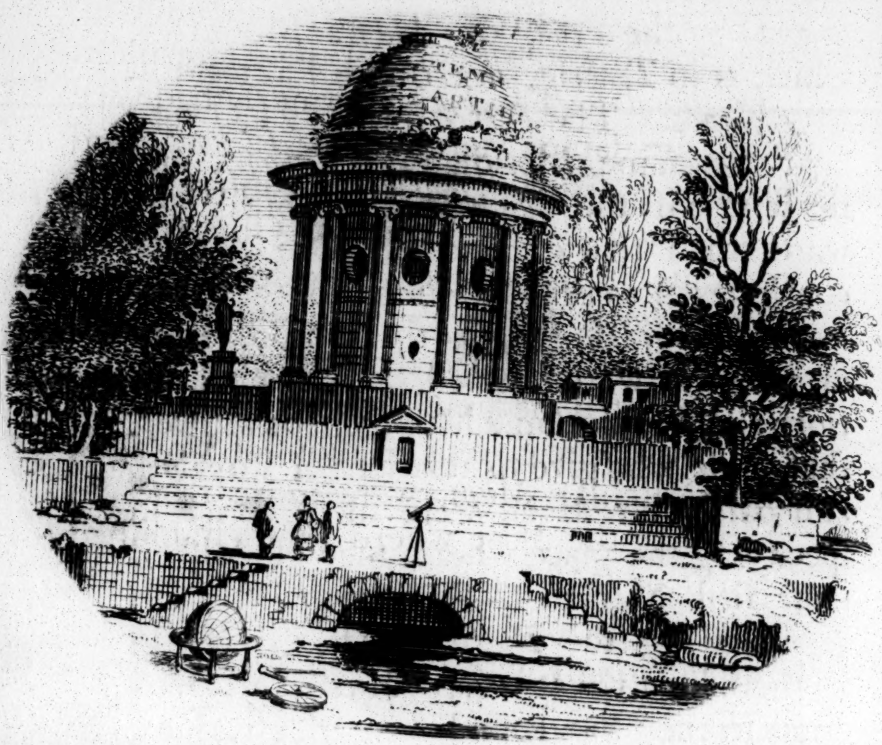
* Had the Time-keeper pointed to two in the Afternoon, it would have proved we had been two hours, or 30 degrees *Weſt* of *London*, or *Weſt Longitude*.

We have a pleaſing account of *Longitude* and the *Meridian Circles* in that old, but elegant French Author *Manneſſon Mallet*, Mathematician to *Lewis the fourteenth*, King of *France*. Speaking of *Longitude*, he ſays, "The *Longitude* Circles are thoſe, which paſs by the *Zenith* of a place, and cut the Poles of the World, to ſhow how far diſtant this place is from the firſt Meridian, and whether Eaſtward or Weſtward thereof. It means the Sun riſes there ſooner or later than in any other place.

"The ancient *Geographers* have eſtabliſhed a firſt Meridian, which was made to paſs by that part of the Terreſtrial Globe, they imagined to be neareſt the moſt Weſtern parts of the Earth diſcovered in thoſe times, and from thence, like a fixed boundary, they began to reckon their *Longitude* in travelling from Weſt to Eaſt.—*Ptolomy* fixed this Meridian on the fortunate Iſlands; ſuppoſing that there was no more land beyond thoſe Iſlands, which are called, at this day, the *Canaries*. The *Portugueſe* have fixed this firſt Meridian in that part of the World, which is one of the *Azore* Iſlands, ſituated almoſt in the mid-way between *Europe* and *America*; they formed this opinion from the Magnetic Needle, which in almoſt every other place varies and declines, but has no variation in this Iſland, as it always points due North.

"The *Hollanders* made this firſt Meridian to paſs by the *Peak*, or *Adam's* Mountain, which is in *Teneriff*, one of the Eaſtern *Canary Iſlands*. The *French* formerly had very near the ſame Meridian as *Ptolomy*, and made it paſs the *Canaries*, but more Weſtward, than that of *Teneriff*. Our Author continues, it were to be wiſhed for the greater facility of *Geography*, that this diverſity of poſitions were rejected, and that all nations adopted the ſame Meridian, or at leaſt, that thoſe who give us relations of Voyages, and particular *Maps*, were more exact in ſpecifying the place where they eſtabliſhed their firſt Meridian.—For my part, I am regulated by the *Dutch Meridian*, who, in all their long voyages have always the Quadrant in their hands and make obſervations, that are generally corrected at *Batavia*, which ought to render their *Maps* preferable to thoſe which are made in the memoirs of each ſimple Traveller that is brought us every day, without having the leaſt principles of the Spheres, or any uſe of inſtruments; in a word, without being able to rectify the accounts which they give of places, and have ſometimes the temerity to embelliſh it themſelves without having proper talents.



SECT. X.

Of Latitude.

LATITUDE is reckoned from North to South, and is an Arch of the Meridian of that place intercepted between its *Zenith* and the *Equator*.—Or, it is an Arch of the Meridian intercepted between the *Pole* and the *Horizon*; and therefore on the Globes called the *Poles height*. *Latitude* in navigation is the diſtance of a ſhip from the Equator (or middle of the Earth) either

North or South, and is counted on the [*] *Meridian,* ſo that if a ſhip ſails towards the Equator, ſhe is ſaid to *depreſs* the *Pole* ; but if ſhe ſails from the Equator, or from a leſſer Latitude to a greater, ſhe is ſaid to *raiſe* the *Pole*. And whenever a ſhip ſails to or from the Equator, either North or South, her way thus gained, is called, her *difference of Latitude*. But to give a very full explanation relative to the more extenſive meaning of *Latitude,* we are to conſider the *true form* of our *Earth,* which is *round* or *Globular,* and likewiſe that there is a bright fixed Star in the North part of the heavens, which we call the *North Pole.* —— Now when we are at the Equator, or middle of the Earth, this ſtar, which never moves appears in the *Horizon,* or level with the Earth ; therefore we then call it no degrees Latitude ; the globularity of the Earth occaſions a *ſwell* which makes the

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[*] See this Meridian in the Circular Maps, it is the outermoſt Circle bounding the projections, and it is numbered by tens from 0 to 90, on this the Latitude is always reckoned. Latitude begins at the Equator, where it is nothing ; ſo it ends at the Poles, where the Latitude is greateſt or 90 degrees. —The *large line* that runs ſtraight acroſs from both the 0 in the Meridian, is the *Equator* which divides the Earth exact in the middle.

North Pole at this place appear level with the *Horizon.*—But as we travel from the Equator towards the *North,* we obſerve this Star riſe higher, we are then ſaid to *raiſe the Pole*; but ſhould we turn our backs and go beyond the Equator *Southward,* we ſhould immediately loſe ſight of this Star, as the ſwell of the Earth would be ſo great betwixt this Star and our eye, that it would be totally hid from our ſight, and this is called *depreſſing the Pole*; and here we ſhould be entertained with ſeveral curious Stars, or Conſtellations in the South, which we never can ſee in our Northern Climates, and the more we continue our voyage, or journey ſouthward, the more of thoſe Stars would apparently ariſe to our view.—But on our return again to the North, we at firſt ſhould loſe ſight of that Star called the *North Pole,* until we came once more to the Equator (which, as before obſerved, is the exact middle of the Earth) here we ſhould again juſt obſerve the North Star above the Earth or *Horizon*; now if we continue travelling ſixty miles more Northward, and then take this Star's height by a Quadrant, &c. we ſhall find it one degree high; which is equal to 60 miles, and every 60 miles we travel North, that Star will appear one degree, or 60 miles higher in the heavens*, and thus having continued our voyage due North for ſome weeks, and are at a loſs to know how far we are got Northward, we again examine the height of this Star, and find it to be thirty degrees above the *Horizon*; therefore we ſay that we are in thirty degrees North *Latitude*, which is equal to 1800 miles, and ſhows us to be 1800 miles from the Equator, where we firſt diſcovered the North Star; in a word, every degree the Pole Star ſeems to have advanced in the heavens, proves that we have advanced ſixty miles Northward upon the Earth, and thus when we arrive in *England*, we obſerve our *Latitude* is 51 degrees and a half, which is the elevation of the North Pole with us, and ſhews we are about 3100 miles from the Equator, or middle of the Earth. Thus alſo we have explained that the *Latitude* of a place is its diſtance from the * Equator towards the North or South Pole, and is denominated North or South, as the given place is on the North or South ſide of the Equator. The *Poles* are the fartheſt points of the Earth from the Equator, they have the greateſt *Latitude*, which is ninety degrees, or a fourth part of 360, the whole circumference of the Globe. It is remarkable, that in the height of our Summer, at twelve o'clock at noon, the Sun appears to want but very little of being exact over our heads, and yet the Sun at this time is no farther North Latitude than 23½ degrees, but we are in 51½ degrees North Latitude, conſequently the Sun wants to advance 28 degrees more Northward to be exact over our heads, *i. e.* in our *Zenith*, which is equal to 1680 miles. This has been and ſtill may be proved beyond a doubt, for was any perſon to journey towards the Sun full South, and although he every day drew nearer to the Sun, yet he would not have this great orb exact over his head, until he arrived at *Jamaica*, *Arabia*, the *Mogul's empire*, or ſome other place in 23½ degrees Latitude, and then he would have the Sun in his *Zenith*, or exactly over his head, ſo that he would at twelve o'clock in the day caſt no ſhadow. Even a tall may-pole ſet up at this time, and in this place, would have no ſhadow, was the Sun to ſhine ever ſo ſtrong. Should we at this ſeaſon (that is the height of our Summer) continue travelling until we came to *Bengal*, or the coaſt of *Guinea*, we ſhould then paſs the Sun, and at twelve o'clock at noon, inſtead of looking Southward for the Sun, we muſt look the contrary way, *i. e.* North, and there we ſhould ſee the Sun in his full glory and ſplendour. It is worth attention to remember, that in

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* For example, ſuppoſe we were to aſcend a high hill, behind which is a Church, when we firſt begin to advance the hill, its ſwell or riſe between us and the Church prevents our ſeeing the building, till we have got half up the hill, and thus raiſed our eye above a level with its top, we then firſt begin to diſcover the ſteeple; as we aſcend the Church ſeems to riſe higher, for now we plainly diſcover the battlements, and when arrived at the top of the hill, the obſtacle between us and the object being removed, the whole body of the edifice preſents itſelf to our view; thus it is evident, every ſtep we made up the hill, we raiſed the Church more and more to our ſight, by leſſening the ſwell of the hill between us; thus we will ſuppoſe the top of the Church the North Star; the hill the ſwell or globularity of the Earth; by aſcending this ſwell we raiſe ourſelves and leſſens its interpoſition, and conſequently gain a compleat ſight of the Church, or Star; and this experiment moſt infallibly proves the globularity or roundneſs of our Earth, which is alſo demonſtrated in a Lunar Eclipſe, when the Earth, by interpoſing itſelf between the Sun and Moon, hath its ſhadow caſt upon the Moon, and this ſhadow is always agreeable to the form of the Earth which is round.

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* See the broad ſtraight line that cuts through the Globes in the *Circular Map*, which is the *Equator*, any place ſituated North of this, is ſaid to have greater or leſs *North Latitude* in proportion to its diſtance from it, and *vice verſa* any place ſituated Southward, is ſaid to have *South Latitude*; thus the *Bay of Bengal* is about fifteen degrees *North Latitude*, and *Madagaſcar* about twenty degrees *South Latitude*.

Summer at twelve o'clock in *England*, we are obliged to look full South for the Sun, but at *Barbados*, *Bengal*, &c. in that ſeaſon they have no Sun in the South, but are obliged to look to the North for it, for then every day at twelve o'clock the Sun is full North with them, but in Winter they ſee the Sun as we do full South at twelve o'clock: the whole of this diverſity is eaſily explained by viewing the *Circular Maps*, and obſerving this *Phenomenon* is ſolely occaſioned by the places being ſituated on different ſides of the Sun's path, which is called the *Ecliptic*.

SECT. XI.

Uſe of the Circular Maps.

WE ſhall begin with thoſe *Circular Maps*, whoſe various *Lines* and *Circles* with their different uſes, have all been fully explained; but ſhould the learner not clearly comprehend them, its recommended to give the former pages another attentive peruſal, as a thorough knowledge of thoſe things will greatly tend to facilitate his improvement. Thoſe *Circular Maps* eſſentiall differ from the ſquare ones. The former including the *whole World*, the latter only *one Quarter*, or any leſſer part thereof. —When you would find any place in the Maps, you muſt firſt know the *Longitude* and *Latitude* of the place required, for this uſe there are books on purpoſe, as *Salmon's Gazetteer*, *Echard's*, *&c.* which gives you the *Longitude* and *Latitude* of moſt places in the known World; but to make it more convenient, I have added a ſmall table at the end of this work, with the *Longitude* and *Latitudes* of a few places, which may ſerve well enough for our preſent purpoſe. —It muſt be remembered, that the *Longitude* in this table is reckoned from *London*, but the *Longitude* in the *Circular Maps* is reckoned from *Ferro*, and as *London* is 17 d. 25 min. eaſt of *Ferro*, the *Longitude* of any place may be reduced to the Meridian of *London*, by *adding* 17d. 35m. if Weſtward, and ſubſtracting the ſame if Eaſtward, but to make it more eaſy, I have calculated the *Latitude* and *Longitude* of ſeveral places, making *Ferro* the firſt Meridian, that it might be applicable to the *Circular Maps* as before mentioned.

Thus *New Mexico* is ſomewhat more than thirty degrees *North Latitude*, and ninety degrees *Weſt Longitude* from *Ferro*; to find this place in the *Circular Maps* proceed as follows. Look on the large outward Circle,

cle (that is the Circle of *Latitude*) for 30; which you will find in the Print of the *Orbicular Map*, left hand Circle; juſt above the figure 30 is a line of *Latitude*, follow this line and you will find it cut through *New Mexico*; then decline your eye to the *Equator*, and find out the figure 90, which cure direct your eye up this line of *Longitude*, which cuts 90 degrees you will find it penetrates through the middle of *New Mexico*, and is the place required; it ſhows you that *thirty degrees North* is the *Latitude*, and *ninety degrees Weſt* is the *Longitude* of *New Mexico*.

Again, *New Spain* in *North America* has twenty degrees *North Latitude*, and eighty degrees *Weſt Longitude* from *Ferro*. Thus having the *Latitude* and *Longitude*, you proceed to find the place as before. In the large outward Circle find the *Latitude* (remembring it is *North*) look in the *upper part* of the Map for twenty degrees; follow the line juſt above the figure 20, and you will find it paſs through *New Spain*, then caſt your eye upon the *Equator*, and find the figure 80, advance your eye up this line of *Longitude*, which paſſes by 80, and you will find, it penetrates through *New Spain*, which is the place required, and proves that in twenty degrees *North Latitude*, and eighty degrees *Weſt Longitude*, is the ſituation of *New Spain.* If the place ſought hath *South Latitude*, you muſt examine for it, on the *South ſide* the Equator (*i. e.* the bottom of the Map) For example: ſuppoſe we want to find the great *South Sea*, whoſe *Latitude* is forty degrees *South*, and 130 degrees *Weſt Longitude*; I proceed as before, and look on the great outward Circle, the Southern ſide of the Equator, and find 40 degrees *Latitude*; the line juſt above 40, I obſerve cuts through the *South Sea*, and proves it to be in 40 degrees Latitude. I then raiſe my ſight to the Equator, and ſearch for 130 degrees *Weſt Longitude*, which done, I trace the line that paſſes 130 degrees, and obſerve it Southward till I ſee it cuts the *South Sea*, and demonſtrates the *Great South Sea* to be as before obſerved, in 40 degrees South Latitude, and 130 degrees Weſt Longitude.

Again, the *Bay* of *Bengal* hath 10 degrees North Latitude, and 110 degrees Eaſt Longitude from *Ferro.* To find this place in the Circnlar Maps, proceed as before (only look in the right hand Circle of Latitude, inſtead of the left as before, by reaſon of its being Eaſt Longitude, all the other was Weſt) and find 10 in the large outer Circle, follow the line that is juſt above the 10, and you will trace it through *Bengal*; then decline your eye to the Equator and find 110, cle (that is the Circle of *Latitude*) for 30, which you will find in the Print of the *Circular Map*, left hand Circle; juſt above the figure 30 is a line of *Latitude*, follow this line and you will find it cut through *New Mexico*; then decline your eye to the *Equator*, and find out the figure 90, which done direct your eye up this line of *Longitude*, which cuts 90 degrees you will find it penetrates through the middle of *New Mexico*, and is the place required; it ſhews you that *thirty degrees North* is the *Latitude*, and *ninety degrees Weſt* is the *Longitude* of *New Mexico*.

Again, *New Spain* in *North America*, has twenty degrees *North Latitude*, and eighty degrees *Weſt Longitude* from *Ferro*. Thus having the *Latitude* and *Longitude*, you proceed to find the place as before. In the large outward Circle find the *Latitude* (remembring it is *North*) look in the *upper part* of the Map for twenty degrees; follow the line juſt above the figure 20, and you will find it paſs through *New Spain*, then caſt your eye upon the *Equator*, and find the figure 80, advance your eye up this line of *Longitude*, which paſſes by 80, and you will find, it penetrates through *New Spain*, which is the place required, and proves that in twenty degrees *North Latitude*, and eighty degrees *Weſt Longitude*, is the ſituation of *New Spain.* If the place ſought hath *South Latitude*, you muſt examine for it, on the *South ſide* the Equator (*i. e.* the bottom of the Map For example: ſuppoſe we want to find the great *South Sea*, whoſe *Latitude* is forty degrees *South*, and 130 degrees *West Longitude*; I proceed as before, and look on the great outward Circle, the Southern ſide of the Equator, and find 40 degrees *Latitude*; the line juſt above 40, I obſerve cuts through the *South Sea*, and proves it to be in 40 degrees Latitude. I then raiſe my ſight to the Equator, and ſearch for 130 degrees *Weſt Longitude*, which done, I trace the line that paſſes 130 degrees, and obſerve it Southward till I ſee it cuts the *South Sea*, and demonſtrates the *Great South Sea* to be as before obſerved, in 40 degrees South Latitude, and 130 degrees Weſt Longitude.

Again, the *Bay* of *Bengal* hath 10 degrees North Latitude, and 110 degrees Eaſt Longitude from *Ferro.* To find this place in the Circular Maps, proceed as before (only look in the right hand Circle of Latitude, inſtead of the left as before, by reaſon of its being Eaſt Longitude, all the other was Weſt) and find 10 in the large outer Circle, follow the line that is juſt above the 10, and you will trace it through *Bengal*; then decline your eye to the Equator and find 110, follow the line at 110, and you will ſee it paſs through *Bengal*; and thus you find the Latitude of *Bengal* is 10 degrees North, and its Longitude 110 degrees Eaſt.—*Ruſſia* hath ſixty degrees North Latitude, and ſixty degrees Eaſt Longitude from *Ferro*, find the Latitude on the great Meridian, or outward Circle as before, and the Longitude upon the Equator, trace the different lines and they will lead you to the place required, *i. e. Ruſſia*—In the ſame manner was you to read (as is common in a newspaper) of a ſhip being loſt at ſea, in 40 degrees South Latitude, and 130 degrees Weſt Longitude; by examining the figures and lines of Longitude and Latitude in the Map, you will immediately diſcover this ſhip was loſt in the *South Sea.*—Again you read of a large fleet being ſeen, or ſpoke with in 30 degrees North Latitude and 20 degrees Weſt Longitude; by applying to the Map (as taught above you are immediately ſhown that this fleet was ſeen in the *Atlantic Ocean.*—You alſo read of a ſea engagement in 40 degrees North Latitude, and 30 degrees Eaſt Longitude from *Ferro*; upon examination you will find this ſea-fight was in the *Mediterranean.*—A violent ſtorm deſtroys ſeveral ſhips in 20 degrees North Latitude, and 60 degrees Eaſt Longitude; you will find it to be the *Red-ſea*, where this hurricane happened.—What has been ſaid is ſufficient for the learner to find out every place upon the *Circular Maps*, as alſo its Longitude and Latitude, I ſhall therefore mention no more examples in this place, only ſet down the Longitude and Latitude of ſome few more places in the *Circular Maps*, for entertainment and improvement of the learner to examine at his leiſure.—*Perſia* is in 30 degrees North Latitude, and 80 degrees Eaſt Longitude from *Ferro*.—*China* is 32 degrees North Latitude, and 130 degrees Eaſt Longitude.—*Mogul's Empire* is 25 degrees North Latitude, and 90 degrees Eaſt Longitude from *Ferro*.—*North America* is 50 degrees North Latitude, and 90 degrees Weſt Longitude, &c. all which will eaſily be found by inſpecting the *Circular Maps*, always remembring the Longitude in theſe Maps is taken from *Ferro*, which although it may ſeem a little intricate is done for the improvement of the learner, that when a Map of this kind falls into his hands, he may not be at a loſs.

It ſhould be obſerved, that *Circular Maps* never have a ſcale of miles added to them (as in other Maps) the Equator anſwering the purpoſe of a ſcale; therefore to know the diſtance of any two places from each other, you muſt be provided with a pair of compaſſes, and extend them from one given place to the other; the compſſes thus open, muſt be applied to the Equator, then count the number of degrees contained between the feet of the compaſſes, and this number of degrees is the diſtance between the two places; if you would turn thoſe degrees into miles, it is only multiplying them by 70 *, as about 70 miles make a degree, and thus you will have the number of miles contained between the two places. For example, I would know the diſtance between the *Mogul's Empire* and *China*; by placing one foot of the compaſſes at the *Mogul's Empire*, I extend the other foot to *China*, then apply the compaſſes thus extended to the Equator, and find there are forty degrees contained between the feet of the compaſſes; conſequently *China* is 40 degrees diſtance from the *Mogul's Empire*, which 40 degrees being multiplied by 70, (the miles in a degree) it gives 2800 miles, and thus we know that *China* is about 2800 miles diſtance from the *Mogul's Empire*. It muſt be remembered, as before obſerved, that the upper part of all Maps is North, the bottom the South, the right hand the Eaſt, and left the Weſt; ſo that obſerving this rule, you will more properly expreſs yourſelf, by ſaying, that *China* is ſituated 2800 miles Eaſtward of the *Mogul's Empire*; and this is what is called the *Bearing* of places, that is, whether to the *North*, *Eaſt*, *South*, or *Weſt* of any place.—Again I ſhould wiſh to know, how far it is from *Great Britain* to the *Mogul's Empire*; proceed as before, by placing one foot of the compaſſes in *Great Britain* (whoſe Latitude is 51½ degrees North, and extend the other foot of the Compaſſes to the *Mogul's Empire*, convey the compaſſes thus extended to the Equator, and obſerving the numbers included between the feet, which are 70 degrees, or equal to 4900 miles, that is to ſay, the *Mogul's Empire* is 4900 miles Eaſtward of *England*, and thus by a little application any perſon may ſoon make thoſe kind of Maps familiar; but as they are not in ſuch general uſe as the ſquare Maps, we ſhall quit the former and proceed to a more copious deſcription of the latter; but firſt it will be neceſſary to explain ſome few eſſential particulars relative to *Geography*.

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* The reaſon why we multiply the degrees by 70, to give the miles in any number of degrees, is becauſe Mr *Norwood* and others, by actual meaſuring, found that a degree upon the ſurface of the Earth did contain 69½ *Engliſh* ſtatute miles, of 1760 yards each, ſo that a degree in round numbers without any conſiderable error, may be called ſeventy miles.

SECT. XII.

The Geography of the World.

GEographers have divided the Earth into four Quarters, which they call the four grand diviſions, *viz.* *Europe* in the *North*, *Aſia* in the *Eaſt*, *Africa* in the *South*, and *America* in the *Weſt*; the three former (that is *Europe, Aſia* and *Africa)* are called the *Old World*, being all that was known to the Ancients, and *North* and *South America*, are called the *New World*, on account of this being diſcovered not more than 280 years ago. *Europe* is the leaſt of the four grand diviſions of the Earth, being about 3000 miles long from *North* to *South*, and 2500 miles broad from *Eaſt* to *Weſt*; if the whole land is ſuppoſed to be divided into one hundred parts.

Europe	will be about	12	of thoſe parts.
Aſia		27	
Africa		26	
America		35	

Obſerve alſo, the Religions in the World are four: *Pagans*, *Jews*, *Chriſtians*, and *Maho-*

Mahometans, which have ſome little differences and diſtinctions among themſelves. If we ſuppoſe all the Inhabitants on the Earth to be divided into thirty equal parts.

The *Pagans*	will be abont	18	of thoſe parts.
The *Jews*		1	
The *Chriſtians*		5	
The *Mahometans*		6	

The number of *Inhabitants* computed at preſent to be in the *known World* at a Medium taken from the beſt Calculations are about 954 millions.

Europe contains	154	millions.
Aſia - -	500	
Africa - -	150	
America - -	150	
Total	954	millions.

Europe is bounded on the North by the Frozen Ocean; on the South by the Mediterranean, and on the Weſt by the Great Atlantic Ocean: It is the leaſt quarter, but of the moſt renown for the temper of the air, the fruitfulneſs of the ſoil; the Study of the Arts and Sciences; but above all, for the eſtabliſhment of the Chriſtian Religion. It contains the following Kingdoms and States:

	Kingdoms.	Length	Breadth	Chief Cities.	Diſtance and Bearing from London.	Diff. of Time from London.	Religions.
					Miles.	H. M.	
Britiſh Empire.	England	[illegible]	300	London			Lutherans.
	Scotland	300	150	Edinburgh	270 N.	0 12 after	Calviniſts.
	Ireland	300	150	Dublin	250 N. W	0 26 after	Lutherans
	Norway	1000	300	Bergen	550 N.	0 24 before	Lutherans.
	Denmark	240	180	Copenhagen	480 N. E.	0 50 before	Lutherans
	Sweden	800	500	Stockholm	750 N, E.	1 50 before	Lutherans.
	Ruſſia	1500	1100	Peterſburg	1140 N. E.	2 4 before	Greek Church.
	Poland	700	680	Warſaw	760 E.	1 24 before	Papiſts.
	Germany	600	500	Vienna	650 E.	1 5 before	Papiſts.
	Pruſſia	400	160	Berlin	540 E.	0 59 before	Lutherans.
Netherlands.	Holland	160	100	Amſterdam	150 E.	0 18 before	All Religions.
	Flanders	180	150	Bruſſels	180 S. E.	0 16 before	Papiſts.
	France	600	500	Paris	260 S. E.	0 9 before	Papiſts.
	Spain	700	500	Madrid	690 S.	0 17 after	Papiſts.
	Portugal	300	100	Liſbon	840 S. W.	0 38 after	Papiſts.
	Switzerland	260	100	Bern	420 S. E.	0 28 before	Calvin. and Papiſts
	Lombardy	400	180	Turin, Genoa, Venice	450 S. E.	0 30 before	Papiſts and Calvin
	Popedom	240	150	Rome	780 S. E.	0 51 before	Papiſts.
	Naples	270	180	Naples	870 S. E.	1 0 before	Papiſts.
	Hungary	300	200	Buda	780 S. E.	1 17 before	Papiſts.
Turky in Europe.	Danubian Provinces	600	420	Conſtantinople	1320 S. E.	1 58 before	Mahometans Jews, and Chriſtians.
	Lit. Tartary	380	140	Caffa	1500 S	2 24 before	
	Greece	[illegible]	240	Athens	1230 S. E.	1 37 before	

The ſituations of the ſeveral Kingdoms and States, with the principal Towns in each, you will find deſcribed in the foregoing Map, by which their reſpective diſtances from each other may be meaſured.

The oppoſite Scale is ſo very eaſy as to require no explanation; but to prevent the younger part of my Readers being at any loſs, I have inſerted an example to make it perfectly clear—I would wiſh to know the Length, Breadth, chief City, &c. of *Spain*: I paſs my eye down the firſt Column till I find *Spain*, even with it is found 700, advancing my eye to the top of that Column, I obſerved the word *Length*, which informs me *Spain* is 700 miles in length—The next figure on a ſtraight line with *Spain*, is 500, on the top is wrote *Breadth*, and tells me that *Spain* is 500 miles in breadth—Next is wrote *Madrid* (which by obſerving the top of the Column mentions it to be, the *chief City* in *Spain*—Next I find 690 S. and means that *Spain* is 690 miles South of *England*; 0 17 after, ſignifies that the Inhabitants of *Spain* can never ſee the Sun riſe till 17 minutes after us: to explain this we muſt remember that the Earth is of a round or globular form, and turns upon its Axis intirely round in 24 hours; the Sun is a fixed body; the motion of the Earth is Eaſtward; now the motion of the Earth turns us along with it every morning towards the Sun till 12 o'clock at noon, then we have the Sun in Summer apparently almoſt over our * heads, the Earth keeps turning on Eaſtward takes us from the Sun, which then ſeems declining behind us, and appears to go down in the Weſt, when, in fact, it is ourſelves by this motion of the Earth are removed away from the Sun, and thus being turned from its light occaſions our night, but the Earth conſtantly keeping on its motion, after immerſing us in darkneſs, brings us again to the Sun, which at firſt the globularity

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* There are two cauſes of the great difference between the Winter and Summer heat and cold, one is the ſhorter or longer continuance of the Sun above the Horizon; in Summer long, which increaſes the heat as much as it lengthens the day; in Winter ſhort, which diminiſhes the heat, as it ſhortens the day, and augments the cold as it lengthens the night.——The other cauſe is the oblique or perpendicular direction of the Sun's rays, the oblique being weaker than the perpendicular, as is evident from *Galilæo*'s experiment in his ſyſtem *Mundi*, *Dial.* I. by holding a paper turned up at right angles, or a book half opened againſt an illuminated wall, where it may be obſerved, that the ſide oppoſite the wall, which the rays ſtrike perpendicularly, is far more light and white than the other ſide on which the rays fall obliquely. The ſame it is in the incidence of the Sun's rays on any plane, namely, the rays are ſo much ſtronger, and the plane the more warmed and enlightened, as the rays are more or leſs perpendicular.

bularity of the Earth occaſions a ſwell between our eye and the Sun, till being turned more towards it, the ſwell leſſens, and we by degrees obſerve this chearful luminary, and thus as we are more moved towards it, it hath that appearance which we call *Sun-riſing.* This Phænomenon is occaſioned by the Earth's diurnal motion, and hence the Earth turning towards the Eaſt, muſt bring every place that is ſituated more Eaſtward to the Sun firſt. Thus *London* being more Eaſt than *Spain,* is brought by this diurnal motion oppoſite to the Sun before *Spain,* ſo that *London* paſſes under the Sun 17 minutes before *Spain* (which is Weſtward or behind *London)* and this is the reaſon our Tables ſay *Spain* is 17 minutes after *London,* Thus *Spain* paſſes the Sun 20 minutes before *Portugal, Spain* being five degrees Eaſt of *Portugal*; in a word, the more Eaſtward any place is from *London,* the ſooner thoſe people will ſee the Sun in the morning, and conſequently will have the Sun ſooner in their Meridian (which is noon-day) than any place that is Weſterly of them, and thus, all places ſituated Eaſt of *London,* will have the Sun in their Meridian, before the Inhabitants of *London.*—Thus for example you will ſee by the foregoing Map of *Europe,* that *Prague* and *Bohemia,* in *Germany,* are near

15 degrees Eaſtward of *London*; it muſt be remembered that 15 degrees is equal to one hour in time, therefore *Prague, Bohemia*, and all *Germany* will have the Sun in their Meridian (which will be noon) four hours before us.

Any place farther Eaſtward of us, as *Poland*, which is about 35 degrees Eaſt of *England* will ſee the Sun riſe, and have it in their Meridian about one hour and an half before us. *Ruſſia*, which is more than 30 degrees Eaſt of *London*, will ſee the Sun riſe more than two hours before us, and conſequently their noon at *Ruſſia* will be two hours ſooner than with us at *London*, that is, when it is 12 o'clock by the Sun at *Ruſſia*, it will be ſcarce 10 o'clock by the Sun with us in *London*; and thus at *Siberia*, which is the moſt Eaſtward part of *Europe*, being more than 70 degrees Eaſt of *London*, they will ſee the Sun riſe almoſt five hours before we can, and will obſerve the Sun in their Meridian, when at the ſame moment we perhaps obſerve it but juſt riſing. Thus they will have paſs their morning, and got to noon, when with us it is but juſt Sun riſe, for were we to obſerve an accurate Sun-dial, and find by it ſeven o'clock in the morning, was an Inhabitant of *Siberia* that moment to examine an accurate Sun-dial, that it would be noon, or 12 o'clock;

thus the more Eaſtward the ſooner the Inhabitants have their noon; and the more Weſt the later their noon. Thus at *Portugal*, which is near 15 degrees Weſt of us, they do not ſee the Sun riſe till near one hour after us, nor have they noon till one hour after us. Thus *Jamaica* is 77 degrees Weſt of us, and conſequently when it is noon with us, it is only ſeven o'clock in the morning with them: hence we find the more Eaſterly any place is, the Sun riſes earlier, and comes to the Meridian ſooner, and on the contrary the more Weſterly any place is, the Sun riſes and comes to the Meridian later.

S E C T. XIII.

A Table ſhewing the length of the longeſt and ſhorteſt Day and Night in different Countries.

Torrid Zone.		D.	M	
Guinea	in *Africa*	5	0	*N. Latitude.*
Sumatra	in *Aſia.*	4	0	*S. ditto.*
Java	in *ditto*	6	0	*S. ditto.*
Borneo	in *ditto*	4	30	*N. ditto.*
Malabar	in *ditto*	9	30	*N. ditto.*
Malacca	in *ditto*	2	30	*N. ditto.*
Panama	in *America*	9	0	*N. ditto.*
Peru	in *ditto*	5	0	*S. ditto.*

It may be obſerved by the *Latitude*, that all thoſe places are near the Equator, and therefore have ſcarce any variation in their day and night, the Sun through the whole year riſes and ſets with them at ſix o'clock; this is the Torrid Zone, and is exceeding hot, having two Summers in every year, that is, the Sun twice in a year at 12 o'clock is exact over their heads, viz. *March* and *September*, at which time was a perſon in thoſe parts to ſet upright a ſtick, or fix their knife in the ground, and the Sun was to ſhine, it would caſt no ſhadow; in *June*, at 12 o'clock, their ſhadows are caſt to the South, and in *December* their ſhadows are caſt to the North.

In all theſe Countries the Sun is ſeen to riſe in a direct line, and proceed ſtraight up over the heads of the Inhabitants, and ſet exactly oppoſite to where it riſes. But with us we obſerve, the Sun riſes on or about the Eaſt; as it riſes it does not come immediately over our heads, but obliquely draws off towards the South. The Star which we call the North-pole, and appears in the heavens almoſt over our heads, is ſcarcely ſeen by them, and when it is, appears but juſt above their Horizon. Thoſe who inhabit this Zone, have likewiſe two Winters in a year, the firſt in *July*, the ſecond in *December*; but their Winters are not cold; ſo that it appears our two Seaſons of *Spring* and *Autumn* are their two Summers, and our two Seaſons of Winter and Summer, are to them two Winters. There are many more curious Phænomena of Nature to be obſerved in thoſe parts, but would exceed the compaſs of this work to deſcribe them all.

Temporate Zones.

	D.	M.	
Morocco in *Africa*	30	0	*N. L.*
Barbary in *ditto*	29	0	*ditto.*
Perſia in *Aſia*	31	0	*ditto.*
China in *ditto*	32	0	*ditto.*

Theſe places as being farther from the Equator, have not ſuch exceſſive heat, being more temperate; but although included in the temperate Zone are much warmer than we are. The 21ſt of *June* is their longeſt day, the Sun at that time riſing with them at five in the morning, and ſets at ſeven in the evening; their ſhorteſt day is 21ſt of *December*, at which time the Sun riſes at ſeven, and ſets at five.

		D.	
Portugal	in *Europe*	40	*N. L.*
Spain	in *ditto*	40	*ditto.*
Turky	in *ditto*	40	*ditto.*
Tartary	in *ditto*	45	*ditto.*
France	in *ditto*	45	*ditto.*
Italy	in *ditto*	45	*ditto.*

These

Thoſe parts are warmer than *England*, but not ſo warm as the above; their longeſt day is at the ſame time of the year, the Sun riſing about a quarter paſt four, and ſets at half paſt ſeven, which is their longeſt day; on their ſhorteſt day the Sun riſes at eight, and ſets at half paſt four.

	D.	
Germany in *Europe*	50	*N. L.*
England in *ditto*	52	*ditto.*
Poland in *ditto*	54	*ditto.*
Denmark in *ditto*	55	*ditto.*

All thoſe places as they vary but little in Latitude from *England*, have their Seaſons, length of their days, and temperature of the air, much as in *England*, except *Denmark*, and ſome parts of *Poland*, which is colder than we are.

Frigid Zone.

	D.	
Ruſſia in *ditto*	62	*N. L.*
Norway in *ditto*	63	*ditto.*
Greenland in *Europe*	65	*ditto.*
Nova Zembla in *ditto*	75	*ditto.*
The *Frozen Sea* in *ditto*	80	*ditto.*
The *North-pole* in *ditto*	90	*ditto.*

In theſe Countries, and all parts that have North Latitude, they muſt have their longeſt and ſhorteſt day exactly at the ſame time of the year, as with us, *i. e.* 21 *June*, and 21 *December*, but will very conſiderably vary in length, for on their longeſt day the Sun riſes with them at half paſt one in the morning, and ſets at half paſt ten; but on their ſhorter day the Sun riſes at ten, and ſets at two; the long deprivation of the Sun at this Seaſon accounts for the very intenſe coldneſs of their Climate.

In *Greenland* (which is famous for our Whale fiſhery) the more Northern parts have very long days in Summer, the Sun riſing a little after one in the morning, and does not ſet till after ten in the evening; but *Nova Zembla*, the *Frozen Sea*, and *Baſſin's Bay*, where there are great plenty* of Whales, all theſe parts are exceſſive cold; exhibiting immenſe Seas of ice. In *Nova Zembla*, their longeſt day is three months, during which time the Sun never ſets with them; they are likewiſe in the Winter three months deprived of the Sun's light, during which time the Sun never appears above their Horizon, which is their

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* The greateſt Curioſity in this quarter is the Whale-fiſhery among the ſhoals of ice, which have been increaſing for ages upon the coaſt of *Greenland*; a Whale uſually 60, or 80 feet long, affords from 60 to 100 barrels of oil from his fat, and 4, or 500 pieces of Whalebone, which is taking from his Jaws or Gills. This trade is chiefly carried on by the Engliſh and Dutch; one Whale is valued generally at 1000, or 1200l.

Winter, and then the cold is ſo intenſe as to *freeze Brandy*. The Inhabitants of thoſe parts are very few, and theſe Savages are low in ſtature, and of an ugly mien ſomething reſembling a bear. They live upon the fleſh of Whales, Bears, Foxes, Rain-deers, and go muffled up in ſkins, the hairy ſide next their bodies. Beyond theſe parts lie *New Britain*, *New North Wales*, *New Denmark*, *&c.* in *America*; and *Yeſdo*, *Kamſchatza* in *Aſia*, all very little known. Thoſe who inhabit, if any there are, directly under the North-pole at 90 degrees, muſt in their Summer have the Sun for ſix months without ever ſetting during that time, and in the Winter muſt have a night ſix months long, the Sun never appearing above their horizon from *September* to *March*. Theſe accounts ſhould at leaſt teach us to prize the temperature our own Climate, which ſeldom heat or cold, light or darkneſs, approach to ſuch an exceſs, as to afford the reaſon of complaint, that the elements of nature are unfavourable to human felicity.—Before this *Section* is concluded, it will be neceſſary to deſcribe the difference of their miles in the ſeveral Countries above mentioned.

The difference of the Miles in ſeveral Countries is very great; but it will be uſeful to remember, that

The *Engliſh*, *Italian*, and *Turkiſh*, are nearly the ſame.

The *Scotch* and *Iriſh* mile is about one and a half *Engliſh*.

The *German*, *Daniſh*, *Dutch*, and *Poliſh* is about four *Engliſh*.

The *Swediſh* is about five *Engliſh*.

The *Spaniſh* is about 3½ *Engliſh*.

The *Hungarian* is about ſix *Engliſh*.

The *Ruſſian* is about three quarter *Engliſh*.

The *Perſian*, *Arabian*, and *Egyptian*, is about three *Engliſh*.

The *Indian* is almoſt three *Engliſh*.

The *French league* is two of our miles.

The *Engliſh league* is three of our miles.

A *Degree* upon the Equator is 60 miles; but in meaſuring diſtances upon Earth we reckon 70 miles to a degree for reaſons before given.

SECT. XIV.

The Proportion that the ſeveral parts of Europe *bear to each other.*

THE following is the proportion that the ſeveral Empires, Kingdoms, and States of *Europe*, bear to each other, in point of territorial extent, laid down in geographical ſquare * leagues.

Ruſſia in *Europe* 57,600, the Climate cold, ſituated North, their longeſt day near 20 hours.

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* Three miles make a league.

Poland, including *Lithuania*, 12,900, the Climate much as *England*, and the length of their day varies but little from ours.

Sweden, with the great Dutchy of *Finland*, 12,800, the Climate very cold, being more North than *Ruſſia*, their longeſt day about 22 hours.

Germany 11,236, the Climate temperate, their days of the ſame length as in *England*.

The *Turkiſh Empire* in *Europe* including the *Crimea*, 10,544, their Climate very warm, or rather hot, their longeſt day about 15 hours.

France 10,000, their Climate ſomewhat warmer than *England*, their longeſt day about one hour ſhorter than with us.

Spain 8500, the heat of their Climate and their length of day, much as in *Turky*.

Denmark, including *Norway*, 6100, the Climate colder, and their longeſt day conſiderably longer than in *England*: *Norway* is extreme cold.

Great Britain with *Ireland* 6000, the Climate temperate, the longeſt day about 17 hours.

Hungary, with *Tranſylvania*, *Sclavonia*, and part of *Croatia* and *Dalmatia*, 4766, their length of day and temperature much as *France*.

Portugal 1875, the Climate ſomewhat hotter than *Spain*, and their longeſt day rather ſhorter than in *Spain*.

Naples and *Sicily* 1836, Climate and length of day the ſame as *Spain*

Sardinia, with *Piedmont* and *Savoy* 4224. —*Swiſs Cantons* 4030, the *Popedom*, or *Eccleſiaſtical State*, 800.—*Pruſſia*, with the new Acquiſitions, 722.—The *United Provinces* 625.—The *Republic of Venice* 625.—The *Grand Dutchy of Tuſcany* 400.—The *Republic of Genoa* 90.—*Corſica* 200.—*Modena* including *Parma*.

The Sum total amounting to 49.507 geographical leagues.

SECT. XV.

The Deſcription and Uſe of thoſe Maps which repreſent one Quarter of the World, and more particularly this of Europe *as before us.*

A *Map* is a repreſentation of ſome part of the ſurface of the Earth delineated upon a plane. The oppoſite is a Map of that quarter of the Earth we inhabit, called *Europe*.—In *Maps* three things are chiefly required; the firſt is to ſhew the Longitude and Latitude of places, or the ſituation they are in with regard to the Circles of the Globe; this all Maps in general which are laid down from Tables of Longitude and

Latitude perform by means of the Meridians and Parallel Lines delineated upon them, in what manner ſoever they be projected, either ſquare, round, oblong, *&c.* and they do this the more accurately the greater number they have of Meridians and Parallels. The ſecond requiſite is to exhibit the ſhape of Countries the ſame as they really are, and the extent of them in the ſame juſt proportion, as upon the Earth. The third is, that the Bearings and Diſtances of places from one another be truly ſhewn.

There are alſo *Sea Charts*, which are particular Maps for the uſe of Navigation, wherein is exhibited ſome part of the Sea with the ſhores that bound it. The Inland parts are frequently omitted as of no uſe to the Sailor, except where there are large Rivers for him to go up, or Sea-marks for him to ſee at a diſtance; but the parts of the Sea near the ſhore are carefully laid down with marks ſignifying Rocks, Sands, or Flats, and figures expreſſing the *ſoundings* or depth of the Water.—There are two kind of Charts, one called the *Plane Chart*; the other called *Mercator's Chart*. The *Plane Chart* is where the Parallels of Latitude are all of the ſame length with the Meridians, and is therefore very erroneous, except in ſhort voyages, and near the Equator; but

Wrights, commonly called *Mercator's Chart*, is much more correct, as the Meridians are increaſed in proportion as the Parallels ſhorten; that is, as the Secants of the Arch contained between the point of Latitude and the Equator; but of theſe we ſhall treat no more at this time, not being applicable to our preſent purpoſe.

When a *Map* is laid before us, as this of *Europe*, we are to conſider the top, or upper part, is the *North*; the right hand the *Eaſt*, the left *Weſt*, and the bottom, or part next you, *South*; this premiſed, it will be more eaſy for us to aſcertain the different Bearings of various Countries; we are then to obſerve, as in the Map of *Europe*, the grand diviſions, which will be as follows; beginning at the South-weſt part of the Map, and thus in a regular manner proceed with all the Kingdoms and States as they lie before us, as *Portugal, Spain, France, Italy, Turky, Germany, Poland, Ruſſia, &c.* theſe naturally follow each other from Weſt to Eaſt, by retaining this progreſſion in our memory, we ſhall have a more accurate idea of Geography, as well as a more general knowledge of Maps.

The next thing to be conſidered in a Map is what part, or from whence it takes its firſt Meridian. This ſcience would be rendered much eaſier was all Geographers, to agree and fix upon one general Meridian; that is, to eſtabliſh one ſtated place, for all nations to meaſure their different diſtances from, this would ſave much perplexity. It was once attempted, and *Ferro*, (as before obſerved) was the place from which moſt of the European nations, began their meaſurement, and this method is ſtill made uſe of by ſeveral; but a much greater part have rejected *Ferro*, and choſe *London* for their firſt Meridian, as being a place of more note; hence it is we ſee that different Maps vary in their firſt Meridian, and for this reaſon I have preſented the reader with a Map of *Europe*, in which there are two firſt Meridians, the one taken from *Ferro*, the other from *London*. This may appear ſomewhat more difficult, but when it is once comprehended by the Learner, it will tend greatly to facilitate his improvement in Geography, and likewiſe afford him a much clearer idea of Maps in general. The outward large figured lines both on the top and bottom of the Map, are the lines of Longitude, thoſe outward figured lines on the ſides are lines of Latitude; the upper line of Longitude is reckoned from *Ferro*; but in the under line, the Longitude is reckoned from *London*, as the Reader will obſerve by inſpection, there being a ſmall dotted line which paſſes through *Great Britain*, on which is wrote *Meridian of London.*

Firſt, to find the *Latitude* of any place, look the place in the Map, then lay either a pencil or your finger upon it, and move your finger, &c. to either of the ſides, keeping the ſame diſtance between the lines above and below it, and the Degree you meet with in the ſide is the Latitude required.

For example, I would know the *Latitude* of *Madrid* in *Spain.* In the South Weſt, which is the left hand corner of the Map, you will find *Madrid* the capital of *Spain*, trace the line which *Madrid* is upon to the ſide, you will find cut nearly the figure 40, which ſhows that *Madrid* is in 40 degrees Latitude; but although *Madrid* is found at the bottom or Southward part of this Map of *Europe*, yet it muſt be called *North Latitude*, for all this Map, that is, all *Europe*, lies North of the Equator, and therefore every place in *Europe* has North Latitude, conſequently *Spain*, which is in *Europe*, muſt be ſituated in 40 degrees North Latitude, this will be more clearly underſtood, by referring you to the Circular Map, where in the upper part of the Circular Map near figure 40, on the ſide, you will find *Spain*, and ſhows you it is 40 degrees Northward of the Equator. To know the Latitude of a place is of great moment, for by that we can tell the temperature and ſituation of the place, whether in the *torrid, temperate,* or *frigid* Zone; that is, whether the country is hot, temperate or cold, and alſo by the Latitude is known, the length of the longeſt and ſhorteſt day and night of the inhabitants, which you will find in the Table, *Sect.* 13.

It may be neceſſary to obſerve, that although *Spain* is *Northward* of the Equator, yet it is *Southward* of the inhabitants of *Great Britain*, *i. e.* nearer the Equator than *England*, and conſequently warmer, remembring to obſerve as a general rule, that the nearer any place is to the Equator the hotter, and the more Latitude, or more remote from the Equator, the colder; thus *England*, which is 51 degrees and a half from the Equator, muſt be conſiderably colder than *Spain*, which is only 40 degrees from the Equator; and *Norway, Ruſſia, &c.* which is above 60 degrees from the Equator, muſt be conſiderably colder than *England*; thus the nearer you advance the North Pole (which is at 90 degrees) the more extreme the cold, for reaſons obvious, *i. e.* the Sun being Southward of us, the more North we travel, the leſs of its influence is felt; but the more ſoutherly we travel, the more of its warmth, the truth of this hath been proved.

proved, and that without travelling any immenſe diſtance. For inſtance, was one perſon to travel to *Scotland* in the Winter, another perſon at the ſame time to travel to the South of *France*, the former would find the air colder, and the latter would feel a much warmer air, by reaſon one would travel from the other towards the Sun. But to proceed, I would wiſh to know the Latitude of the *Caſpian Sea*. The *Caſpian Sea* lying in the Eaſt, I examine the right hand ſide of the Map, at the very end thereof I find the *Caſpian Sea*, and obſerve the line of *Latitude* which paſſes through it, cuts the number 45, which is on the ſide and near it, and ſhows that the *Caſpian Sea* is in 45 degrees North Latitude; had the Longitude been required, the line which croſſes the *Line of Latitude* muſt have been traced up to the top of the Map, when it would cut 70 degrees, and ſhows that the *Caſpian Sea* is in 70 degrees Eaſt Longitude from *London*, and 45 degrees North Latitude. *Siberia* is ſituated between 60 and 63 degrees Eaſt Latitude, by examining the figures on the right hand ſide of the Map I find the above degrees, near which is *Siberia*, the place ſought, and proves it to be in 63 degrees Latitude.

Again, I require to know what place is ſituated 22° 25′ * Eaſt Longitude of London, and 40 degrees North Latitude? Anſwer, find 40 degrees Latitude on either of the ſides, and run your pencil or finger along the line, until you are oppoſite the figure 22d. 25 min. at the bottom of the Map, ſtop there and you will find it to be Greece. Note, that had the Longitude been from *Ferro*, you muſt have directed yourſelf from the top line of the Map, where you will ſee theſe words expreſſed, *Longitude from Ferro*, and on the bottom line is wrote *Longitude from London*; and therefore on ſurveying a Map of any country, it is of the firſt importance to be particularly attentive from what part they take their firſt Meridian.—Again, ſuppoſe it was required what Latitude and Longitude *Greece* was in: this is only *vice verſa*. Having found *Greece*, follow the line that cuts through it to the bottom of the Map, you will find it cut through 22d. 25min. Eaſt of *London*,

then

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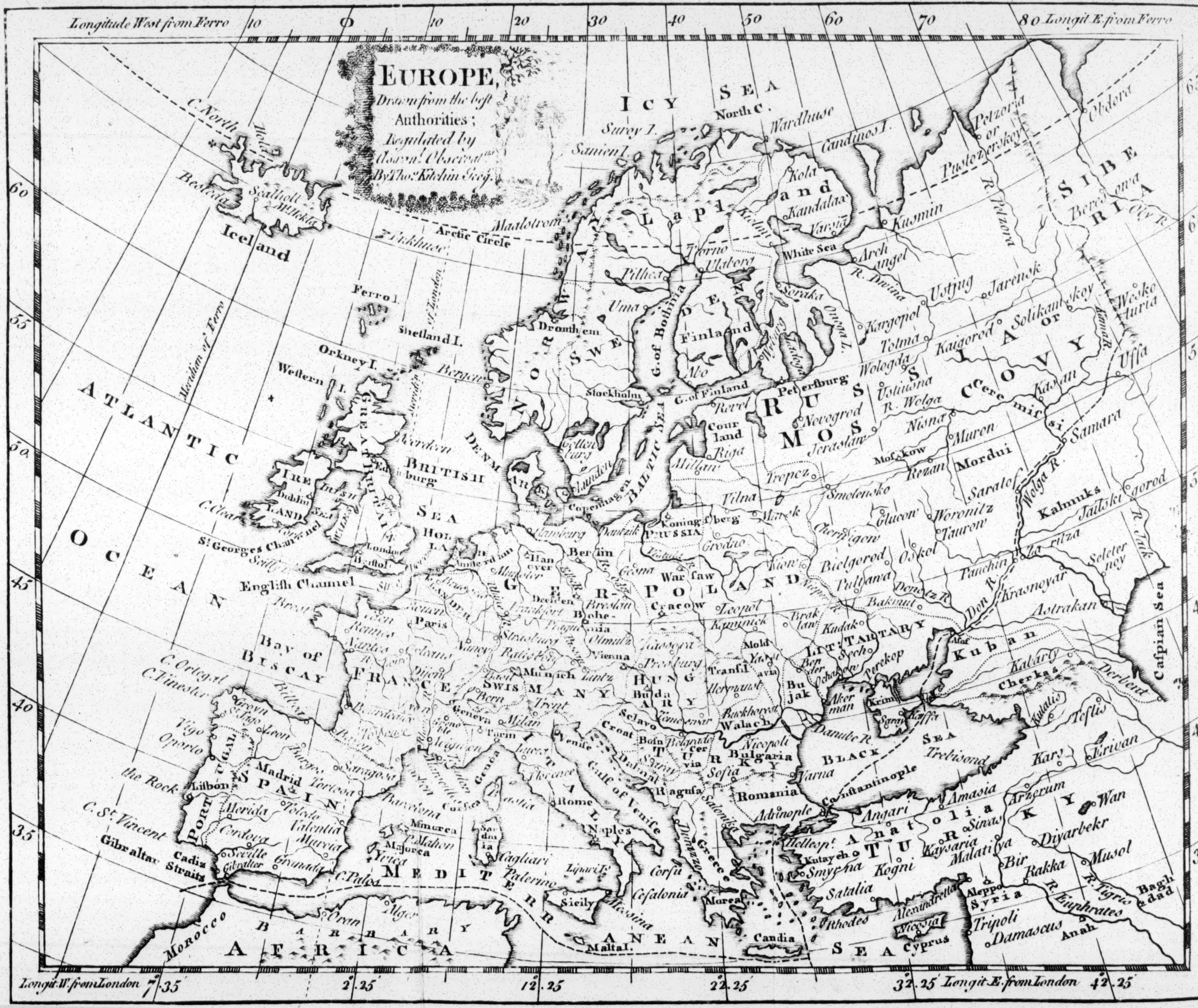
* It muſt be remembered that o at the top of a figure ſignifies degrees, and ′ ſignifies minutes, ″ ſignifies moments, therefore 22° 25′ means 22 degrees and 25 minutes, had it extended to moments, there would have been a double mark over the laſt number, as thus 22° 25′ 20″ and would have been read, twenty two degrees, twenty five minutes, and twenty ſeconds.



EUROPE,
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Regulated by
Aſtron.l Observat.ns
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then attend to the other line which cuts through *Greece*, and is the line of Latitude; trace this line to either ſide of the Map, and you will find it cuts 40 degrees, and thus *Greece*, as before obſerved, is ſituated in 40 degrees North Latitude, and 22° 25′ Eaſt Longitude of *London*.

To find the Longitude of any place, only run your finger or pencil from it to the top or bottom of the Map (according from what place you require the Longitude, whether from *Ferro* or *London*) and the degrees againſt it is the Longitude required. Thus the Longitude of *Poland* is 22° 25′ to the Eaſt of *London*, as may be ſeen at the bottom of the Map; and 40 degrees Eaſt of *Ferro*, as may be obſerved on the top of the Map.—Again, by the ſame rule you will find the Longitude of *France* is 2° 25′ Eaſt from *London*, by obſerving the bottom of the Map, and on inſpecting the top thereof you will find it 20 degrees Eaſt of *Ferro*. To find the Latitude and Longitude (from *London*) of *Portugal*, look in the left hand corner of the Map of *Europe*, *i. e.* South-weſt, where you will find *Portugal*, attend to the Line of Latitude that paſſes through it, and you will find it cuts on the ſide 40 degrees of Latitude, then trace the line of Longitude that cuts through it, and follow this line to the bottom, when you will ſee it goes through 7° 35′, and proves *Portugal* to be ſituated in 40 degrees Latitude, and 7° 35′ degrees Weſt Longitude, or Weſt of *London.*—Suppoſe we were to hear, or read of a veſſel being loſt in 60 degrees North Latitude, and 22° 25′ Eaſt Longitude from *London*; from this account it is required to know the place where this ſhip was loſt. I look on the ſide of the Map of *Europe* for 60 degrees Latitude, which being found, I trace the line near it until I come oppoſite 22° 25′ at the bottom, and then ſtop and find it is the *Baltic Sea*, and near the Gulph of *Finland*, is the place where the ſhip was caſt away; or *vice verſa*, to find the Longitude and Latitude of the Gulph of *Finland*, direct your eye ſtraight from the above place to the ſides of the Map, you will find the line of Latitude that paſſes through, will cut 60 degrees; then from *Finland* direct your eye to the bottom of the Map, and you will find the line cut 22 deg. 25 min. and proves the Gulph of *Finland* to be ſituated in 60 degrees North Latitude, and 22 degrees 25 minutes Eaſt Longitude of *London*.

You may obſerve in the Circular Maps the lines of Latitude are 10 degrees diſtant from each other, but in the Map of *Europe*, they are only five degrees diſtant from each other, but all this is a matter of choice in the Geographer, which relates merely to the ſcale of the Map, and occaſions not the leaſt error in the Latitude of places ſought. It frequently happens, that we require to know the Latitude of a place that lies between the figures, as *Muſcovy*, which being ſituated between the lines that cuts 55 and 60 degrees Latitude, it muſt therefore be called in 57 degrees Latitude, obſerving the double line that runs ſtraight up by the figure of Latitude, which is marked with black and equal white ſpaces, as thus, 1 2 3 4 5, theſe makes in all five degrees as marked at top, thus is ſeen that each black, and alſo each white ſpace make a degree. The ſame rule is to be obſerved on the Longitude lines at the top and bottom of the Map; thus you will find the *Black Sea* is in 42½ deg. Latitude, and 32 deg. 25 min. Eaſt Longitude.—*Breſt* is in 47½ degrees Latitude, and about 10 deg. Weſt Longitude from *London*.—*Peterſbourg* is in 59 deg. Latitude, and 32 deg. 25 min. Eaſt Longitude from *London*.

To meaſure diſtances in thoſe Maps, proceed as follows: Fix one foot of your compaſſes on the place you want to meaſure *from*, extend the other foot to the place you want to meaſure *to*, take the compaſſes with their feet thus extended to the ſide of your it goes through 7° 35′, and proves *Portugal* to be ſituated in 40 degrees Latitude, and 7° 35′ degrees Weſt Longitude, or Weſt of *London.*—Suppoſe we were to hear, or read of a veſſel being loſt in 60 degrees North Latitude, and 22° 25′ Eaſt Longitude from *London*; from this account it is required to know the place where this ſhip was loſt. I look on the ſide of the Map of *Europe* for 60 degrees Latitude, which being found, I trace the line near it until I come oppoſite 22° 25′ at the bottom, and then ſtop and find it is the *Baltic Sea*, and near the Gulph of *Finland*, is the place where the ſhip was caſt away; or *vice verſa*, to find the Longitude and Latitude of the Gulph of *Finland*, direct your eye ſtraight from the above place to the ſides of the Map, you will find the line of Latitude that paſſes through, will cut 60 degrees; then from *Finland* direct your eye to the bottom of the Map, and you will find the line cut 22 deg. 25 min. and proves the Gulph of *Finland* to be ſituated in 60 degrees North Latitude, and 22 degrees 25 minutes Eaſt Longitude of *London*.

You may obſerve in the Circular Maps the lines of Latitude are 10 degrees diſtant from each other, but in the Map of *Europe*, they are only five degrees diſtant from each other, but all this is a matter of choice in the Geographer, which relates merely to the ſcale of the Map, and occaſions not the leaſt error in the Latitude of places ſought. It frequently happens, that we require to know the Latitude of a place that lies between the figures, as *Muſcovy*, which being ſituated between the lines that cuts 55 and 60 degrees Latitude, it muſt therefore be called in 57 degrees Latitude, obſerving the double line that runs ſtraight up by the figure of Latitude, which is marked with black and equal white ſpaces, as thus, , theſe makes in all five degrees as marked at top, thus is ſeen that each black, and alſo each white ſpace make a degree. The ſame rule is to be obſerved on the Longitude lines at the top and bottom of the Map; thus you will find the *Black Sea* is in 42½ deg. Latitude, and 32 deg. 25 min. Eaſt Longitude.—*Breſt* is in 47½ degrees Latitude, and about 10 deg. Weſt Longitude from *London*.—*Peterſbourg* is in 59 deg. Latitude, and 32 deg. 25 min. Eaſt Longitude from *London*.

To meaſure diſtances in thoſe Maps, proceed as follows: Fix one foot of your compaſſes on the place you want to meaſure *from*, extend the other foot to the place you want to meaſure *to*, take the compaſſes with their feet thus extended to the ſide of your

Map, and the degrees contained between the feet will be the quantity of degrees, the two places are diſtant from each other, and if multiplied by 70 will give you the miles. For example, to find the diſtance between *London* and *Copenhagen*, you muſt fix one foot of the Compaſſes at *London*, and extend the other foot to *Copenhagen*, convey the compaſſes, thus opened, to the ſides of the Map where the degrees are marked and you will find they will include ſeven degrees, which being multiplied by 70, gives 490, and is the diſtance betwixt *London* and *Copenhagen*; but on nice meaſurement, you will find they are a trifle more than ſeven degrees diſtant; therefore with more propriety it may be ſaid, that *Copenhagen* is 500 miles North Eaſt of *London*.

Again, the diſtance is required between *London* and *Naples*; on meaſuring the diſtance between thoſe two places by the Compaſſes, and apply them to the ſides, it will be found they contain near 13 degrees, which is about 900 miles (South Eaſt) from *London*.—The diſtance is alſo required between *London* and *Rome* in *Italy*; upon an accurate meaſurement you will find ſomewhat leſs than 12 degrees, which is nearly 800 miles, and by attending to the Map you will find the bearing of *Rome* is South Eaſt of *London*; therefore we ſay *Rome* is ſituated 800 miles South Eaſt of *London.*— Again, I would wiſh to know the diſtance between the king of *Spain* and the Empreſs of *Ruſſia's* dominions, taking the meaſurement from both the capitals, *i. e. Madrid* and *Peterſbourg*; this diſtance requires a conſiderable extenſion of the Compaſſes, which being applied to either of the ſides will be found to include nearly 26 degrees, which is about 1800 miles, and is the diſtance which *Peterſbourg* lies North Eaſt from *Spain.*—But to meaſure nearer diſtances, ſuch as from *London* to *York*, *Wales*, *Briſtol*, *&c.* is more eaſily and accurately performed by a correct Map of *England*, which is annexed to this work, and will be explained under its proper head: But firſt, for improvement, it will be proper to give a ſhort explanation of the different characters and nations on the Earth.

S E C T. XVI.

National Characters.

THE *Turk* is a lover of reſt; ſeated upon a ſofa with his pipe, he will continue in this exerciſe ſix or ſeven hours without intermiſſion; or elſe ſhut up in the Seraglio among his miſtreſſes, he will neglect affairs of the utmoſt importance, to indulge himſelf in voluptuouſneſs.

The *Arab* is fond of his horſe almoſt to a degree of infatuation: When the weather will permit, he is continually hunting; when at home fretful; ſhunning the ſociety of his family, and ſooner chuſes to be along with his hunter than his children.

A *Frenchman's* love is principally directed to himſelf. So far from being a lover of reſt, he ſeldom chuſes to ſtand ſtill. He is fond of dreſs, and perpetually boaſting of his amours.

A *Spaniard* is jealous of his honour, brave, faithful, patient in adverſity, capable of enduring every fatigue, and romantic in his projects.

A *German* is ever ſtudious in the ſecrets of nature, indefatigable in his purſuits after Chymiſtry, and as indefatigable in drinking.

The *Dutch* are pack-horſes in trade, who plod on in one tract; ſtrangers to the ſweets of a ſcientific life, and unreliſhing the nice works of genius and art.

The *Italians* are revengeful by nature, and politicians by habit.

The *Portugueſe* inſincere and bigots.

The *Chineſe* love gain, which is their God, they prefer it to every thing; are of a moſt inſinuating addreſs, and naturally a fawning cringing generation: a ſtranger is in great danger of being cheated by them, if he truſts his own judgment, and if he employs a *Chineſe* broker, he will be doubly cheated, as the broker will join with the merchant to cheat his employer if a ſtranger.

The *Swedes* have no great genius, are fond of making a grand appearance above their circumſtances; they are much better qualified for a life of labour and fatigue, than of art and curioſity; they bear cold and hunger to admiration.

To aſk an impartial obſerver which of theſe characters was moſt like our own, he would ſay he had ſeen an *Engliſhman* act all but the *Portugueſe*.

Are not my countrymen as fond of tobacco as the *Turks*? Will they not ſit as many hours ſmoaking as any *Mahometan*? and will they not be as much miſled by a miſtreſs as any turban-wearer.

Will they not, like *Arabs*, neglect their families for hunting matches? and do they not value their horſes frequently more than their wives?

Are they not, like *Frenchmen*, ſelf-lovers, vain of dreſs, and great talkers?

Like *Spaniards* they are brave, faithful, patient, and have conſtitutions capable of enduring the moſt extreme fatigues; are romantic in their projects, and will ruſh into dangers for the ſake of glory.

They are as curious as *Germans* in prying into the firſt workings of creation, and as to drinking, I believe they'll take the field againſt any nation; like *Swedes*, they love ſhow and appearance.

Yet we are as great drudges in trade as *Dutchmen*; almoſt as revengeful as *Italians*; and as to our being politicians—mercy upon us!

S E C T. XVII.

A conciſe Geographical Deſcription of the principal parts of EUROPE, *&c.*

OF *Sweden.* The air of this country is cold, and the ſoil not very fruitful, however it abounds with various ſorts of fiſh, and ſeveral mines of Tin, Iron and Copper. The longeſt day in the North of this country is about two months, and the ſhorteſt ſix hours and a half. Its chief commodities are Metals, Ox-Hides, Goat and Buck-ſkins, Furs, Tallow, Tarr, Honey, Oaks and Firs. *Lutheraniſm* is the eſtabliſhed Religion.

Of *Denmark.* This Kingdom lies North from *England*, the air is very cold and miſty, yet the Soil is good and affords plenty of Corn and Paſturage. Its chief commodities are fiſh, particularly herrings, furniture for ſhips, armour, ox-hides, tallow, fir, wainſcot, &c. The longeſt day is ſeventeen hours and a half, and the ſhorteſt eight and a half. The eſtabliſhed Religion is *Lutheraniſm.*

Of *Norway.* The air of this country is ſo extremely cold, and the ſoil ſo very barren, that it is but thinly inhabited. Its chief commodities are ſtock-fiſh, (which the poor people dry and uſe inſtead of bread) rich furs, train oil, pitch, maſts, cables, deal boards, which they exchange for corn, wine, fruits, and other neceſſaries of life. The longeſt day in the moſt Northern parts is two months, and the ſhorteſt in the moſt Southern ſix hours and a half. The *Norwegians* are a hardy people, but very mean and ignorant. The Religion eſtabliſhed is the ſame as in *Denmark*, but in *Lapland*, and the moſt Northern parts of the country, they know very little of it.

Of *Muſcovy* or *Ruſſia.* The dominions of *Muſcovy*, or *Ruſſia*, are of very great extent, the people hardy and vigorous, and ſince the preſent accompliſhed Empreſs very much poliſhed and improved. The air of is extremely cold during three quarters of the year, and their Summer ſhort. The Sun does not ſet in the moſt Northern part of this country for above two months, the ſhorteſt day in the moſt ſouthern part is about nine hours and a half. The chief commodities of this country are wax, honey, tallow, train oil, caviere, flax, hemp, ſlad iron, furs, ſables, martins, &c. The government is very abſolute and deſpotic, &c. and the common people ſo ignorant, as to believe their great Czar knows all things. The Religion is *Chriſtianity*, but mixt with many *Romiſh* and other ſuperſtitious ceremonies.

Of *France*. *France*, though under an abſolute government, and profeſſing the *Romiſh* Religion, is at preſent the moſt flouriſhing kingdom in *Europe*. The air is very temperate, pleaſant and healthful, the ſoil extraordinary fruitful, and the commodities ſalt, fiſh, corn, wine, pepper, ſkins, ſilks, &c. The days are about the ſame length as in *England*. The language ſo univerſally prevails, that it is uſed in moſt courts in *Europe*. The manners of the people are very polite and agreeable, and the laſt age has produced abundance of great men in almoſt every branch of polite and uſeful learning.

Of *Germany*. *Germany* is divided into three parts; North, Middle and South.

				Chief Towns.
North	the Circle of	*Belgium*	*Holland*	*Amſterdam*
			Flanders	*Bruſſels*
		Weſtphalia		*Munſter*
		Lower *Saxony*		*Hamburg*
		Upper *Saxony*		*Wittenburg*
Middle	the Circle of	The Lower *Rhine*		*Heidelburg*
		The Upper *Rhine*		*Franckfort*
		Franconia		*Nuremburg*
South	the Circle of	*Suabia*		*Auſburg*
		Bavaria		*Munich*
		Auſtria		*Vienna*

The air and ſoil of this large country is very different according to the different ſituation of its ſeveral parts. In this great empire are comprehended above 300 different ſovereignties, yet all or moſt of them ſubject to the Emperor of *Germany*. The language is that called the *High Dutch*. The people are famous for ſincerity in their dealings, and much ingenuity in mechanic inventions.

Of *Poland*. The government of this country is an elective monarchy, and on that account it is often harraſſed with civil wars and diviſions. The air is generally cold, but the ſoil pretty fruitful. It abounds with ſeveral commodities as wax, pitch, ſalt, ſoap, roſin, flax, butter, cheeſe, corn, rich furs, &c. The days are much the ſame length as in *England*, the eſtabliſhed Religion is *Popery*, but all others are tolerated.

Of *Spain* and *Portugal*. The climate of theſe countries is very hot, particularly in *Spain*; the people are lazy, proud, formal, and very much bigotted to the ſuperſtitious parts of Religion. They are very jealous of their wives, who are given to intrigues. The chief commodities are wines, oil, ſugar, rice, ſilk, honey, flax, raiſins, almonds, oranges, lemons, &c. The longeſt day is fifteen hours three quarters, and the ſhorteſt nine hours and a quarter.

Of *Italy*. This is the moſt entertaining country in the world for travellers, as it contains the remains of the greateſt, wiſeſt, braveſt people that ever lived, *viz.* the *Romans*. Here is alſo * *Veſuvius*, the famous burning mountain. The air of this country is pure, temperate and healthful, the ſoil generally exceeding fruitful, but the people ſo broke with ſlavery, and harraſſed with the tyrannies, oppreſſions and impoſitions of their prieſts, that it is not cultivated in the manner it might be. The chief commodities are corn, wine, oil, rice, ſilks, velvets,

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* *Veſuvius* is ſituated in *Campania*, not far from the town of *Naples*; though it be planted with moſt fruitful vines, and at other times yieldeth the beſt *Muſcadel* wine; yet it is very often annoyed with violent eruptions. *Dion Caſſius* relates, that in the reign of *Veſpaſian*, there was ſuch a dreadful eruption of impetuous flames, that great quantities of aſhes and ſulphureous ſmoke were not only carried to *Rome* by the wind, but alſo beyond the *Mediterranean*, into *Africa*, and even into *Egypt*. Moreover,

vets, gold wire, armour, glaſſes, &c. The people are ingenious, and excel in the arts of ſtatuary, architecture, muſic and painting.

Of *Turkey* in *Europe.* This country comprehends *Hungary*, *Greece*, *Little Tartary*, and the *Danubian* provinces. The air of theſe countries is very different, that of *Greece* is allowed to be pure and temperate, the others generally not ſo; the ſoil is pretty fruitful in corn, roots, and various ſorts of fruit. There are ſeveral mines of copper, iron, quickſilver, antimony and ſalt. The prevailing Religion in *Hungary* is that of the church of *Rome*; in *Greece*, *Little Tartary*, and the provinces, *Mahometiſm* is eſtabliſhed. *Conſtantinople* is the ſeat of the

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ver, birds were ſuffocated in the air, and fell down dead upon the ground, and fiſhes periſhed in the neighbouring waters, which were made hot and infected by it. There happened another eruption in *Martial*'s time, which he elegantly deſcribes in one of his *Epigrams*, and laments the ſad change of the mountain, which he ſaw firſt in its verdure, and immediately after black with aſhes and embers. When the burning ceaſed, the rain and dew watered the ſurface of the mountain, and made theſe ſulphureous aſhes and embers fruitful, ſo that they produced a large increaſe of excellent wine; but when the mountain began to burn again, and to diſgorge fire and ſmoke afreſh (which ſometimes happened within a few years) then were the neighbouring fields burnt up, and the highways made dangerous to travellers.

Grand Signor, to whom they are all ſubject; but his power and riches are much curtailed by the preſent more powerful and ſpirited Empreſs of *Ruſſia*.

A S I A.

OF *Tartary*. The air of this country is very different, by reaſon of its vaſt extent from North to South; the moſt Southern parts having the ſame Latitude with the middle provinces of *Spain*, and the moſt Northern reaching beyond the *Arctic Polar Circle*. The longeſt day in the North is about two months, and the ſhorteſt in the South nine hours and three quarters. The manners of the people are very rude and barbarous, their ordinary food is horſe-fleſh, and they live in tents and open fields. The Religion is *Paganiſm* in the North, and towards the South *Mahometiſm* prevails. The great *Cham* of *Tartary* is an abſolute Monarch, and aſſumes ſuch a proud ſuperiority over his ſubjects, as never to be ſpoke to but upon their knee with their faces toward the ground. His ſubjects ſtile him the ſhadow of God, he looks upon himſelf as the monarch of the whole world; and every day after he has dined, he cauſes the trumpets to ſound, thereby giving leave to all the kings and princes of the earth to go to dinner. The chief Commodities of this Country, are Sable, Martins, Silk, Camblets, Flax, Muſk, Cinnamon and great quantities of Rhubarb.

Of *China.* This is thought to be the moſt populous Country in the World; the air is cold in the moſt Northern parts, but generally very temperate; and the Soil is ſo exceeding fruitful that they are ſaid very often to reap two, or three harveſts in a year. The longeſt day is fourteen hours three quarters, and the ſhorteſt ten hours three quarters. It abounds in gold, ſilver, precious ſtones, quickſilver, porcelane diſhes, ſilks, cottons, &c. The *Chineſe* are ingenious and lovers of ſcience. The Religion of the Country is Idolatry, and the Government is at preſent ſubject to the great *Cham* of *Tartary.*

Of *India.* This vaſt Country comprehends all between *Perſia* and *China, viz.* The *Mogul*'s Empire, and the two Peninſula's of *India,* the one within and the other without the *Ganges.* In the *Mogul's* Empire the air in general is cold, and the Soil barren. The length of the days and nights is about the ſame as it is in *China.* The chief Commodities are Aloes, Muſk, Civet, Rhubarb, Indigo, Borax, Opium, Silks, Cottons, Carpets, and moſt ſorts of ſpices. The Religion is *Paganiſm,* and in ſome parts *Maho-*

Mahometiſm. The Government is arbitrary, and the great *Mogul* is heir to every man's eſtate, which he diſpoſes of at his pleaſure. The throne he ſits on is the richeſt in the World. In the *Peninſula* within the *Ganges* the air is very hot, and the Soil exceeding fruitful. The longeſt day is thirteen hours and a half, and the ſhorteſt eleven and a half. The Commodities are Metals, Silk, Cotton, Pearls, Drugs, Dates, Cocoa's, Rice, Ginger, Cinnamon, Pepper, Caſſia, &c. The Religion is generally *Mahometiſm.* The Government is various, and ſubject to many different Princes, but in ſome parts the people are ſubject to no government at all. In the *Peninſula* beyond the *Ganges*, the air is more temperate, and the ſoil, if poſſible, more fruitful. It abounds with mines of gold, and great quantities of precious ſtones: nay ſo vaſtly rich is this Country, that it is thought by many to be the land of *Ophir*, to which *Solomon* ſent his ſhips for gold.— The Commodities of this Peninſula are much the ſame as in the other. And the days the ſame length.

Of *Perſia.* The air of this Country is temperate enough in the Northern parts, but in the Southern exceſſive hot. The Soil is generally fruitful. The longeſt day is fourteen hours and three quarters, and the ſhorteſt thirteen hours and a quarter. The Commodities are curious Silks, Carpets, Tiſſues, Manufactures of Gold, Silk, and Silver, Seal-ſkins, Goat-ſkins, Alabaſter and all ſorts of Metals. The people are very civil to Strangers, luxurious, extravagant in their expences, and much addicted to Aſtrology. The Religion is *Mahometiſm*, and the Government abſolute, being entirely ſubject to the will of the Emperor, who is ſtiled the great *Sophy* of *Perſia*

Of *Turky* in *Aſia*. This vaſtly extended body comprehends *Natolia*, *Arabia*, *Syria*, *Phœnicia*, *Paleſtine* or *Judea*, and the *Euphratian* Provinces. The Religion of all theſe Countries is generally *Mahometiſm*, but in ſome parts there are a great many Chriſtians and Jews. Their Governments are various, but they are all ſubject to the Grand Seignior; the Tyranny of whoſe Government ſo diſcourages induſtry, and depopulates the moſt fruitful Countries, that the *Phœnicians* which of old were ſo famous for Trade and Commerce, are now become a poor and deſpicable people; and *Judea* the Land which for its fruitfulneſs was ſaid to flow with Milk and Honey, is now a barren and uncultivated place.

AFRICA.

AFRICA.

OF *Egypt.* The air of this Country is very hot, and unwholeſome; the Soil as fertile as any in the World, occaſioned by the yearly overflowing of the * *Nile*; but that it *never* rains in this Country may juſtly be thought a vulgar error, though in fact it very ſeldom happens, and never in abundance. The longeſt day is 14 hours an half, and the ſhorteſt 10 and a half. The chief Commodities are Sugar, Flax, Rice, all ſorts of Grain and Fruits, Linen Cloth, Salt, Balſam, Senna, Caſſia, &c. The Religion is *Mahometiſm*, and the Government is ſubject to the Grand Signior.

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* The *Nile* enters *Egypt* almoſt under the Tropic of Cancer, pouring itſelf down no leſs than ſeven cataracts or falls —The *Nile* begins to riſe in *Egypt* about the Summer's Solſtice, and continues riſing till after the autumnal Equinox for about the ſpace of one hundred days, and then gradually decreaſes for as many days till it returns within its banks, and overflows no more till the next year. If the *Nile* does not *riſe* ſixteen cubits, the country is not covered with water, and a dearth enſues. The fertility of the land of *Canaan* was owing to a very different method of Providence; that is, *to the former and latter Rains*, which regularly fell at two appointed ſeaſons of the year, while the children of Iſrael continued in their duty; Moſes thought proper to acquaint them beforehand with ſo material a difference between the promiſed land and that which they had ſo lately left.—The land whither thou goeſt in to poſſeſs, it (ſays the Law-giver) is not as the land of *Egypt*, from whence ye came out, where thou ſowedſt thy ſeed, and wateredſt it with thy foot, as a garden of herbs; but the land whither ye go to poſſeſs, it is a land of hills and vallies, and drinketh the water of the rain of heaven; a land which the Lord thy God careth for— the eyes of the Lord thy God are always upon it, from the beginning of the year even unto the end of the year.

Of *Barbary*. The air of this Country is temperate and healthful, and the Soil fruitful. Its chief Commodities are Honey, Wax, Oil, Sugar, Flax, Hides, Dates, Almonds, &c. Days near the ſame length as in *Egypt*. This large Country comprehends *Morocco*, *Fez*, and ſeveral other Provinces, ſubject to the King of *Morocco*. *Tunis*, *Algiers*, and ſome others ſubject to the Grand Seignior. The Mahometan Religion is profeſſed here, but they differ in many things from all other Mahometans.

Of *Bildulgerid*. This large Country is partly ſubject to the *Turks*, and partly to the King of *Morocco*. The Climate is very hot, yet generally eſteemed wholeſome. The Soil is but indifferent, and the Commodities few, the chief are Corn, Cattle, Dates, and Indigo. The little Religion they have is Mahometiſm.

Of *Zaara*, or the *Deſart*. Much the ſame may be ſaid of this Country as the laſt, only that it is more ſandy and barren, and the Inhabitants, if poſſible, more ſavage and ignorant.

The Land of *Negroes*. The air of this Country is very warm, yet eſteemed ſo very healthful, that ſick perſons are ſaid to be brought hither in order to recover their health. The Soil is exceeding rich, eſpecially towards the river *Niger*, which overflows a conſiderable part of it, as the *Nile* doth *Egypt*. Here is great ſtore of Corn, Cattle, and various herbs. The Woods abound with Elephants and other beaſts, both with and tame. The longeſt day is 13 hours and a quarter, and the ſhorteſt 11 hours and a quarter. The Commodities are Oſtrich Feathers, Gums, Amber, Gold, Red-wood, Civet, and Elephants teeth.

Of *Guinea*. The air of this Country is exceeding hot, and unwholeſome to ſtrangers, the Soil very fruitful, and the Country abounds with Elephants, Mines of Gold, and Rivers which afford abundance of Pearl; and Gold duſt. The longeſt day is 12 hours and three quarters; and the ſhorteſt 11 hours and three quarters. The Inhabitants of this Country are reckoned the blackeſt of all the Negroes, and moſt of them go quite naked. They are very ignorant and ſuperſtitious, and in ſome parts are ſaid to offer human ſacrifices. They think God Almighty a very good Being, and on that account are civil to him; but they worſhip the Devil, and pray to him heartily, for fear he ſhould hurt them.

Of *Nubia*. Much the ſame may be ſaid of *Nubia* as *Guinea*.

Of *Ethiopia*. *Ethiopia* is divided into interior and exterior. *Interior*, or the land of the *Abyſſines*, is wholly within the torrid Zone, and conſequently extrreamly hot — The Soil near the *Nile* is exceeding fruitful, but diſtant from that, the Country is full of mountains and ſandy deſarts. The longeſt day is 13 hours and a half, and the ſhorteſt 10 hours and a half. The Commodities are Gold, Metals, Gems, Corn, Cattle, Salt, Flax, Wine, Sugar-canes, *&c.* The people are compoſed of Pagans, Jews, Mahometans, and Chriſtians; but that which moſt prevails is ſaid to be Chriſtianity. The Government is ſubject to an Emperor, who is called *Preſter John*. *Ethiopia* interior comprehends a great many Kingdoms and States, and is of a vaſt extent, conſequently the Air and Soil is very various. The Commodities are Gold, Silver, Pearls, Ivory, Oil, Ambergreaſe, Muſk, Rice, Millet, Lemons, Citrons, *&c.* The manners of the people are generally barbarous and ſavage. In ſome parts human fleſh is ſold in ſhambles as common as we ſell beef and mutton. The People called Hottentots inhabit part of this Country, and are the naſtieſt of all creatures; they beſmear themſelves with greaſe and all kind of filth; and think they adorn themſelves by hanging the guts and garbage of the beaſts they kill about their necks.

AMERICA.

OF *Mexico* or *New Spain.* This Country lies for the moſt part within the torrid Zone, yet the Air is temperate and healthful, being refreſhed with cool breezes from the Sea. The ſoil is very fertile, producing many ſorts of grain, as Wheat, Barley, Pulſe, and Maize; ſeveral kinds of fruits, as Pomegranates, Oranges, Lemons, Citrons, Cherries, Malicatons, Pears, Apples, Figs, Cocoa-nuts, *&c.* And great plenty of Herbs, Plants, and Roots: with ſome rich mines of Gold and Silver. The longeſt day is 13 hours and three quarters, and the ſhorteſt 12 and a half. The manners of the people are civil; and they excel in painting and playing on ſeveral muſical inſtruments. The Government is ſubject to the King of *Spain*, and the Religion a mixture of Paganiſm and Chriſtianity.

Of *New Mexico*, or *Granada*. This Country is not fully diſcovered. The Soil is dry, ſandy, and barren, the Air temperate and healthful, but ſubject to great hurricanes, with terrible thunder and lightning. The Commodities are few, Cattle being the only thing they trade in. The Natives are governed by certain Captains of their own; the *Spaniards* reſiding here and ſome few of the more civilized natives, are ſubject to the King of *Spain*. The Religion of the Country is Paganiſm, but in ſome places they ſeem to have very little notion of any Religion at all.

Of *Florida*. The Climate of this Country is ſo temperate, that the Inhabitants live to a great age. The Soil is prodigious fertile, producing moſt ſorts of Grain, Herbs, and Fruit. The mountains are lined with conſiderable mines of Gold and Silver, the Rivers afford vaſt numbers of valuable Pearls. The longeſt day is 14 hours and a quarter, and the the ſhorteſt day 9 hours. The people are naturally white, but they colour themſelves ſo as to appear olive colour, and commonly go quite naked except a ſmall piece of deer-ſkin, which ſome wear about their middle.

Of *Terra Canadenſis*. *Terra Canadenſis* conſiſts of ſeveral large and conſiderable Countries, moſt of them belonging to the *Engliſh*,

Engliſh, as *New England*, *New York*, *New Jerſey*, *Penſilvania*, *Maryland*, *Virginia*, *Carolina*, &c. The Air of all theſe places is generally temperate and healthful, and the Soil fruitful. The Commodities are the ſkins of Elks, Deer, Beaver, Otters, Bears, and Leopards; alſo Oil, Olive, Cotton, Indico, Ginger, Tobacco, Turmeric, Snake-root, Hemp, Flax, Hops, Rapeſeed, Madder, Furrs, *&c.* The longeſt day in moſt of thoſe places are about 15 hours, and the ſhorteſt about 9 hours.

Of *Terra Artica*. This comprehends all the Countries within the Arctic Polar Circle, *viz.* *Greenland*, *Spitzberg*, *Nova Zembla*, *Terra de Jeſlo*, *New Denmark*, *New North-wales*. Of theſe Countries little more is known, than that they are extremely cold and barren, and afford very few Commodities.

Of *Terra Firma*. The Climate here is very hot, yet not unwholeſome; the Soil fertile; producing great plenty of Corn and Fruits. It abounds with precious Stones, Pearls, Mines of Gold, Silver, Braſs, *&c.* The longeſt day is 12 hours and a half, and the ſhorteſt day 12 hours. The Religion of the Nation is idolatry, and the Government in a great meaſure, ſubject to the King of *Spain*.

Of *Peru.* This is eſteemed the richeſt of all the Plantations belonging to the *Spaniards.* The Air of this Country is in ſome places extremely-hot, and in others very cold. The Soil in like manner very fruitful in ſome parts, and in ſome ſandy and barren. Its Commodities are vaſt quantities of Gold and Silver, rich Pearls, abundance of Cotton, Tobacco, Cochineal, medicinal Drugs, *&c.* The longeſt day is 12 hours and a quarter, and the ſhorteſt day 10 hours and a half. This Country was formerly governed by Kings, called *Inca's*, but it is now almoſt entirely ſubject to the King of *Spain*, whoſe Viceroy reſides at *Lima.* The Natives worſhip the Sun, Moon, and Stars, Thunder, and Lightning, *&c.*

The Land *of the* Amazons *is very little known.*

Of *Brazil.* The Air of this Country is more temperate than one would expect, it lying moſtly under the torrid Zone. The Soil is fertile, and the Commodities, Sugar, Amber, Roſin, Tobacco, Train-oil. Confectures, and great quantities of red wood uſed by Dyers. The longeſt day is 12 hours and a quarter, and the ſhorteſt day 10 hours and a half. The *Portugueſe* have Settlements upon moſt of the Sea coaſts, and the Uiceroy of *Portugal* reſides at St. *Salvadore*.

Of *Chili*. The Air of the Country in Summer, is much of the ſame quality as in *Spain*; but in Winter the cold is ſo exceſſive, that it frequently kills both man and beaſt. The Soil is generally dry and barren, but towards the Sea the Vallies are very fruitful, and produce great plenty of moſt ſorts of Grain. The longeſt day is 13 hours and a half, and the ſhorteſt day is 7 hours and a half. The chief Commodities are Gold, Silver, Maize, Corn, Honey, Oſtridges, and ſeveral Metals. The Country is moſtly ſubject to the King of *Spain*. The Natives are reckoned the groſſeſt Idolaters of all the *Americans*, worſhipping the Devil, whom they term *Eponamon*, which ſignifies ſtrong or powerful.

Paragua, *Terra Magellanica*, and *Terra Antarctica*, are very imperfectly known.

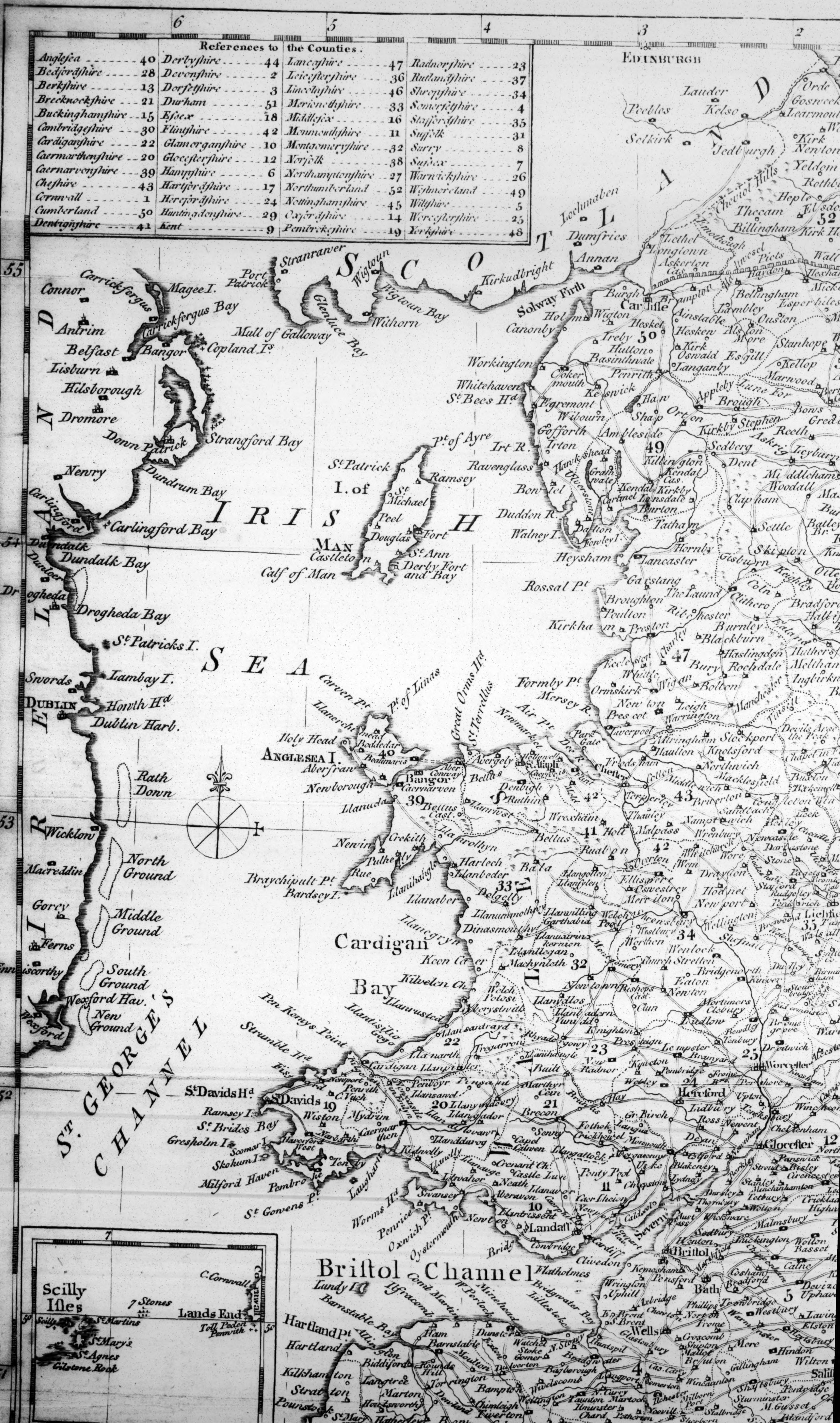
IF, with juſt ſurvey, this extended ſpace
Of earth and ocean, clime by clime we trace,
What ſoil ſo chearleſs but ſome bleſſing bears,
Allays the evil, or with good repairs?
Elſe would mankind each wintry region ſhun,
To court th' approaches of a Southern Sun;
Each rugged hord, tho' fenc'd with ice around,
Impetuous would o'erleap the frozen bound,
Ruſh, like a tempeſt, down their hills of ſnow,
To bow'rs of Spring, and ſunny plains below.
The ſable tribes, upon whoſe languid heads
His fierceſt rays malignant Sirius ſheds;

Whoſe ſultry vapours ſtop the ſtruggling breath,
And ſcorching whirlwinds wing the flaming death,
Wild and impatient of the glowing ſky,
Would to cool ſhades and balmy zephyrs fly;
But partial good the ſenſe of pain controuls,
Beneath the burning Line or frozen Poles.
  The Lapland Hunter, as the tempeſt blows,
Cloſ'd in his cavern, midſt ſurrounding ſnows,
Indulges o'er the lengthening night of joy,
No labours call him, and no cares annoy.
His feaſt to crown, his chearful lamp to feed,
The bloated race of Ocean's monſters bleed;
And ceaſeleſs ſmokes upon his genial board
The rich repaſt which Summer's toil had ſtor'd.
Soon as that morn he views whoſe dawning ray,
For ſix revolving Moons proclaims the day,
Stung with new force, he wields his ſavage arms,
And in his haunt the ſullen Bear alarms;
Urges o'er hills of ice his rapid reins,
Sweeps down the cliff, and beats the frozen plains;
Incred'lous ſmiles of fabled climes to hear,
Where ſhifting ſeaſons portion out the year;
Alternate, where diurnal Suns aſcend,
And ſhades of night their gloomy vale extend.
  To ſwell his triumph, tell of ocean's coaſt,
Where nations ſhiver with Antartick froſt;
Whoſe torpid limbs no furry veſtures warm,
No ſhelt'ring roof protects them from the ſtorm;
Debarr'd all ſocial commerce with mankind,
In ice impriſon'd, and by ſeas disjoin'd;
By chilling Winter pierc'd, by Famine torn,
And left to ſuffer friendleſs and forlorn:
Yet theſe to artificial life unknown,
Make Nature's wants the limit of their own
No falſe deſire, no fancy'd torture feign,
Superfluous pleaſure, or invented pain;
Accept what good the hand of heaven beſtows,
And patient bear their lot of human woes.

SECT. XVIII.

Of thoſe Maps *which repreſent a ſmall part of the* Earth.

TO have an ample idea of the oppoſite *Map*, you muſt obſerve thoſe ſeveral figures which are included and diſperſed within the *Map*, and intended to refer you to the names of thoſe different counties in which the figures are placed; theſe names will be found in the North Weſt or upper corner of the *Map*, and at the South Weſt corner or bottom of the *Map*. Near the *ſcale of miles*, you will find proper remarks to explain what is depictured in the *Map* for Cities, Boroughs, Market Towns, Roads, Rocks, *&c.* The Rivers are deſcribed by black crooked lines, bending according to the actual courſe of the River they repreſent; as the *Severn*, which you will ſee in ſomewhat more than 51½ degrees Latitude, and 3 degrees Weſt Longitude; this River you will eaſily find by looking on the left hand, on the outſide of the *Map* (which is the Latitude) and between the figures 51 and 52 draw a ſtraight line into the *Map*, till you get oppoſite the figure 3, at the bottom of the *Map* (which is the Longitude)



References to the Counties.

Angleſea	40	Derbyſhire	44	Lancaſhire	47	Radnorſhire	23
Bedfordſhire	28	Devonſhire	2	Leiceſterſhire	36	Rutlandſhire	37
Berkſhire	13	Dorſetſhire	3	Lincolnſhire	46	Shropſhire	34
Brecknockſhire	21	Durham	51	Merionethſhire	33	Somerſetſhire	4
Buckinghamſhire	15	Eſsex	18	Middleſex	16	Staffordſhire	35
Cambridgeſhire	30	Flintſhire	42	Monmouthſhire	11	Suffolk	31
Cardiganſhire	22	Glamorganſhire	10	Montgomeryſhire	32	Surry	8
Caermarthenſhire	20	Gloceſterſhire	12	Norfolk	38	Suſsex	7
Caernarvonſhire	39	Hampſhire	6	Northamptonſhire	27	Warwickſhire	26
Cheſhire	43	Hartfordſhire	17	Northumberland	52	Weſtmoreland	49
Cornwall	1	Herefordſhire	24	Nottinghamſhire	45	Wiltſhire	5
Cumberland	50	Huntingdonſhire	29	Oxfordſhire	14	Worceſterſhire	25
Denbighſhire	41	Kent	9	Pembrokeſhire	19	Yorkſhire	48

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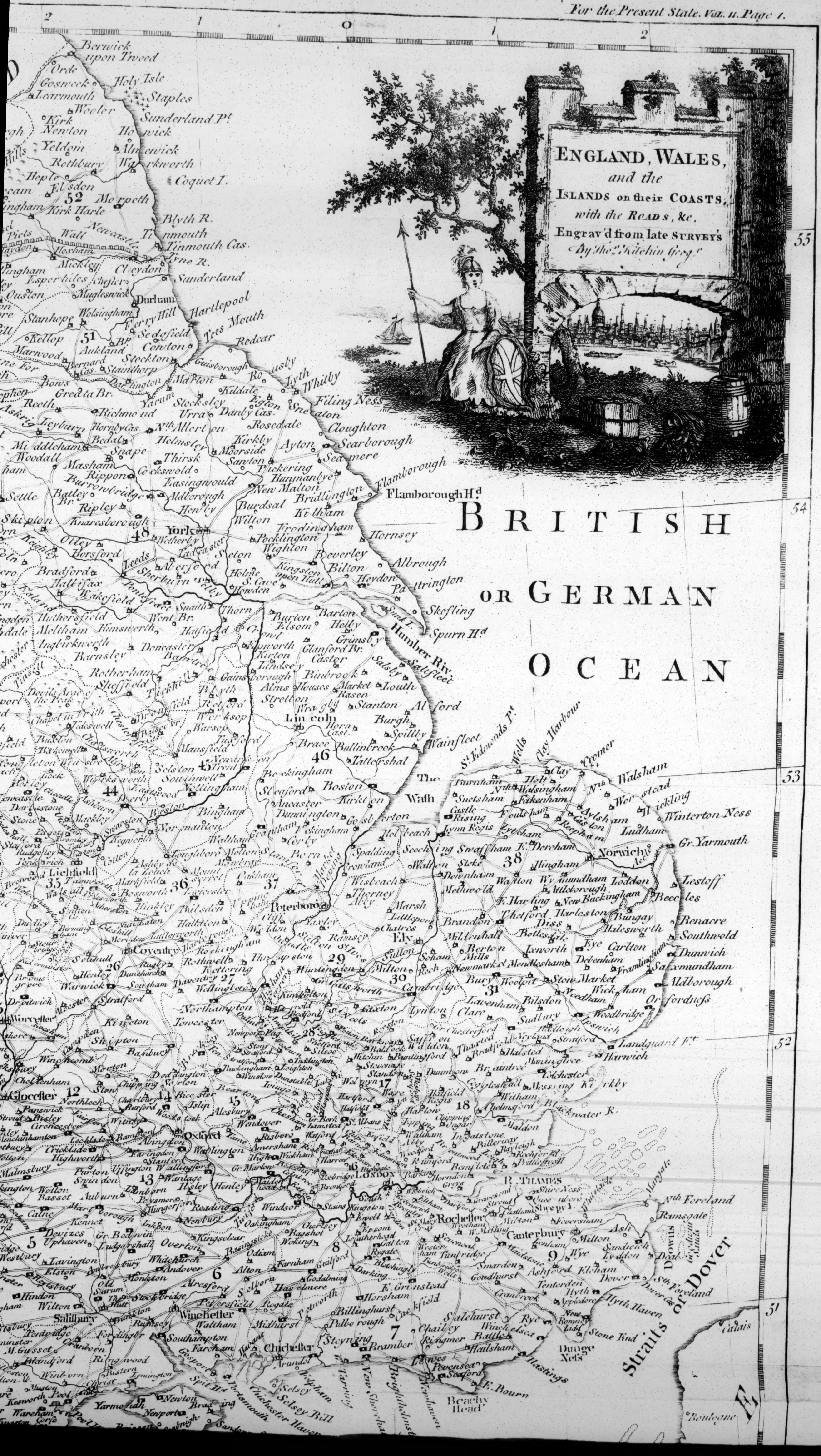
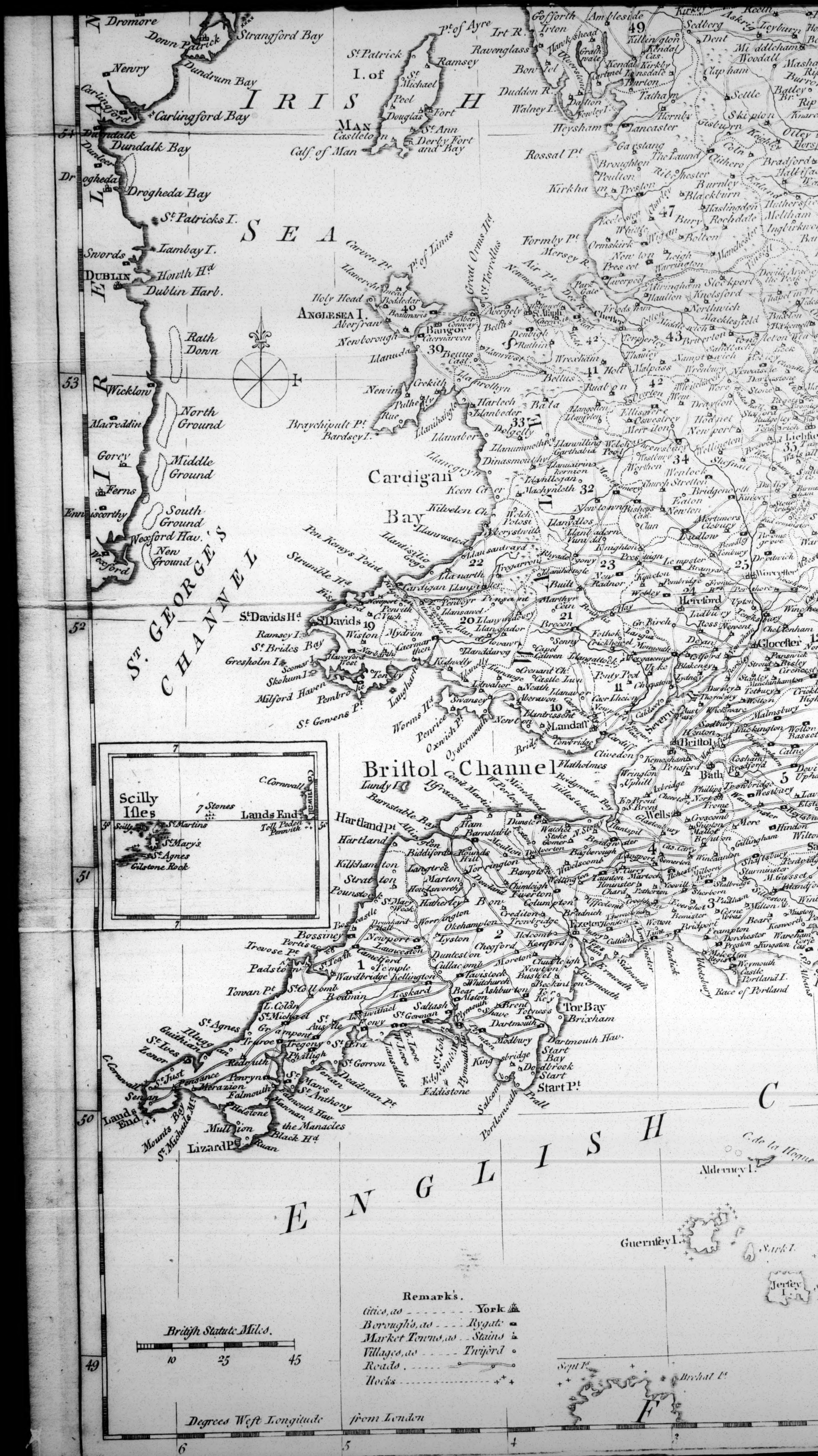
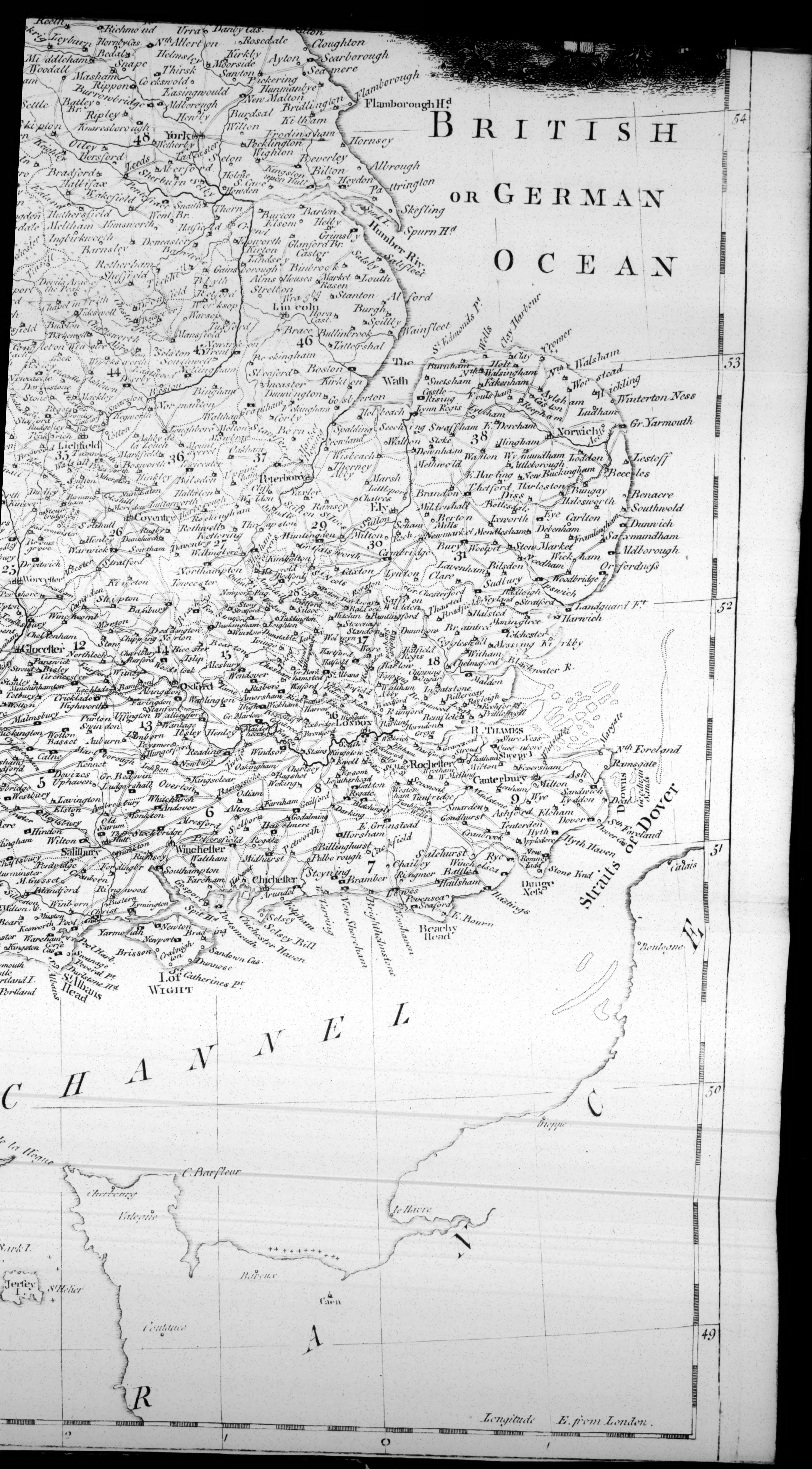



IRISH SEA
ST. GEORGE'S CHANNEL
Bristol Channel
ENGLISH C
Cardigan Bay
I. of MAN
ANGLESEA I.
DUBLIN
Dublin Harb.
Howth Hd.
Lambay I.
St. Patricks I.
Drogheda Bay
Dundalk Bay
Carlingford Bay
Dundrum Bay
Strangford Bay
Dromore
Down Patrick
Newry
Swords
Wicklow
Macreddin
Gorey
Ferns
Enniscorthy
Wexford
Wexford Hav.
Rath Down
North Ground
Middle Ground
South Ground
New Ground
Pt. of Ayre
St. Patrick
Ramsey
Douglas
Castleton
Calf of Man
Derby Fort and Bay
Holy Head
Beaumaris
Bangor
Caernarvon
Newborough
Aberfraw
Bardsey I.
Harlech
Dolgelly
Aberystwith
Cardigan
St. Davids
St. Davids Hd.
Ramsey I.
St. Brides Bay
Milford Haven
Pembroke
Tenby
Caermarthen
Swansea
Worms Hd.
Landaff
Cardiff
Brecon
Hereford
Monmouth
Chepstow
Glocester
Worcester
Ludlow
Shrewsbury
Chester
Liverpool
Lancaster
Preston
Kendal
Manchester
Bristol
Bath
Wells
Lundy I.
Barnstable
Biddiford
Hartland Pt.
Exeter
Plymouth
Dartmouth
Tor Bay
Start Pt.
Eddistone
Falmouth
Truroe
Penzance
Lands End
Lizard Pt.
Mounts Bay
St. Michaels Mt.
Dorchester
Weymouth
Portland I.
Race of Portland
Alderney I.
Guernsey I.
Sark I.
Jersey I.
C. de la Hogue
Scilly Isles
St. Martins
St. Mary's
St. Agnes
Gilstone Rock
7 Stones
Lands End
C. Cornwall
Remarks.
Cities, as .... York
Borough's, as .... Rygate
Market Towns, as .... Stains
Villages, as .... Twiford
Roads
Rocks
British Statute Miles
10
25
45
Degrees West Longitude from London
6
5
4
54
53
52
51
50
49


BRITISH
OR GERMAN
OCEAN
CHANNEL
CHANNEL
Straits of Dover
Longitude E. from London.
54
53
52
51
50
49
2
1
0
1
Flamborough Hd
Flamborough
Scarborough
Cloughton
Seamere
Richmond
Leyburn
Middleham
Bedale
Nth Allerton
Thirsk
Masham
Rippon
Burrowbridge
Ripley
Knaresborough
Easingwould
Aldborough
York
Wetherby
Tadcaster
Pickering
New Malton
Bridlington
Kilham
Frodingham
Pocklington
Hornsey
Beverley
Bilton
Heydon
Albrough
Patrington
Skefling
Spurn Hd
Humber Riv.
Saltfleet
Kingston upon Hull
Leeds
Bradford
Hallifax
Wakefield
Sherburn
Selby
Howden
Snaith
Thorn
Huthersfield
Barnsley
Doncaster
Rotherham
Sheffield
Barton
Glanford Br.
Caistor
Grimsby
Louth
Market Rasen
Gainsborough
Lincoln
Horncastle
Alford
Wainfleet
Spillsby
Tattershal
Boston
Sleaford
Newark on Trent
Mansfield
Worksop
Retford
Southwell
Nottingham
Derby
Bingham
Grantham
Stamford
Spalding
Crowland
Holbeach
Kirkton
Gosberton
The Wash
Lynn Regis
Castle Rising
Burnham
Wells
Clay Harbour
Cley
Holt
Cromer
Nth Walsingham
Fakenham
Aylsham
Nth Walsham
Worstead
Hickling
Winterton Ness
Ludham
Reepham
Norwich
Gr. Yarmouth
Swaffham
E. Dereham
Downham
Wymundham
Attleborough
Loddon
Lestoff
Beccles
Thetford
Brandon
Diss
Harleston
Bungay
Halesworth
Benacre
Southwold
Dunwich
Saxmundham
Aldborough
Orfordness
Framlingham
Eye
Debenham
Stow Market
Needham
Woodbridge
Ipswich
Landguard Ft.
Harwich
Bury
Woolpit
Newmarket
Mildenhall
Ely
Chatteris
March
Wisbeach
Thorney Abby
Peterboro
Huntingdon
St. Ives
Cambridge
St. Neots
Bedford
Clare
Lavenham
Sudbury
Hadleigh
Colchester
Manningtree
Thaxted
Saffron Walden
Braintree
Coggeshall
Witham
Chelmsford
Maldon
Blackwater R.
Hatfield
Hertford
Ware
St. Albans
Epping
Billericay
Rochford
Rayleigh
Romford
Barking
Brentwood
LONDON
R. THAMES
Gravesend
Rochester
Sheerness
Sheppey
Feversham
Canterbury
Margate
Nth Foreland
Ramsgate
Sandwich
Deal
Downs
Dover
Sth Foreland
Hyth
Hyth Haven
Romney
Stone End
Dunge Ness
Rye
Winchelsea
Hastings
Battle
Hailsham
Pevensey
Seaford
E. Bourn
Beachy Head
Lewes
Brighthelmstone
New Shoreham
Steyning
Bramber
Horsham
E. Grinstead
Cuckfield
Tunbridge
Maidstone
Ashford
Tenterden
Cranbrook
Guildford
Godalming
Farnham
Petworth
Midhurst
Arundel
Chichester
Selsey Bill
Chichester Haven
Portsmouth
Spit Hd
Gosport
Southampton
Winchester
Petersfield
Alresford
Alton
Basingstoke
Odiam
Kingsclear
Newbury
Hungerford
Reading
Henley
Windsor
Oxford
Abingdon
Wallingford
Wantage
Aylesbury
Buckingham
Bicester
Banbury
Warwick
Coventry
Leicester
Lichfield
Northampton
Towcester
Stratford
Worcester
Glocester
Cirencester
Malmsbury
Chippenham
Calne
Devizes
Marlborough
Salisbury
Wilton
Andover
Whitchurch
Stockbridge
Romsey
Fordingbridge
Ringwood
Christchurch
Lymington
Pool
Wareham
Blandford
Winborn
Swanage
St. Albans Head
Portland
Yarmouth
Newport
Brading
Sandown Cas.
St. Catherines Pt.
I. of WIGHT
Calais
Boulogne
Dieppe
le Havre
Caen
Bayeux
C. Barfleur
Cherbourg
Valogne
Coutance
la Hogue
Jersey I.
St. Helier
Sark I.

there ſtop, and you will have the River *Severn*, which you will ſee riſes in *North Wales*, and running for the moſt part South, falls into the *Briſtol Channel*, and communicates with the *Iriſh Sea.*—The *Thames* you will find on the right hand ſide of the *Map*, between 51 and 52 degrees Latitude, and one degree Eaſt Longitude: it takes its riſe in *Glouceſterſhire*, above *Oxford*, and runs from Weſt to Eaſt through the cities of *Oxford* and *London*. There are alſo ſeveral capital Rivers, which take their riſe in *Staffordſhire* and *Yorkſhire*; thoſe Rivers all unite together in one, and is called *The Humber* (in *Yorkſhire*) emptying itſelf into the *German Ocean*, which may be ſeen on the right hand ſide of the *Map*, between 53 and 54 degrees Latitude, and one degree Eaſt Longitude; but the *Humber* is in no degrees Longitude, and may be found by tracing up the line which cuts the 0 at the bottom. It muſt farther be obſerved, this *Map* includes little more than *England*, therefore the Meridians and Parallels are ſtraight lines drawn through every degree of Longitude and Latitude, But in ſome Maps of very ſmall diſtricts, as of a County or Hundred, whatever part of the Earth it may be in, the Meridian and Parallel lines may be drawn through every minute or moment of a degree, according as the largeneſs of the Map will allow; and theſe (as in the preceding Map) by ſtrait lines. For as a ſmall part of a great Circle upon the Earth doth not differ ſenſibly from a ſtrait line, ſo a ſmall part of a ſpherical ſurface of the Earth, differs not ſenſibly from a plain. By inſpecting this Map of *England*, it will be ſeen that the firſt Meridian is taken from *London*; this is known by attending to either the top or bottom figures (which are the figures of Longitude) and obſerving the o amongſt thoſe figures, which you will find in the bottom line; and trace up the line which cuts through this o, and you will paſs through *London*; and it ſhews that we make *London* in no degrees of Longitude, and conſequently our firſt Meridian. Thus having found *London*, caſt your eye to the figure on the ſides*, and you will find *London* to lie almoſt exact between 51 and 52 degrees Latitude; we may therefore ſay, that *London* is in no degrees Longitude, and 51½ Latitude, being ſituated (as you ſee by the Map) in the South Eaſt part of *England*. If it ſhould be aſked, what part of *England* is ſituated in 50 degrees Latitude, and 4 degrees Weſt Longitude? On the bottom line you will obſerve this figure 4, which is the Longitude; trace ſtrait up from that figure, until you are oppoſite 50 degrees on the ſide, there ſtop, and you will find the place to be *Portſmouth*, in *Devonſhire*. It ſhould therefore be ſaid, that *Portſmouth* is ſituated in 50 degrees Latitude, and 4 degrees Weſt Longitude, bearing South Weſt of *London*. Thus *York* will be found in 54 degrees Latitude, and one degree Weſt Longitude. *Edinburgh* is at the very top of our Maps of *England*, being tbe moſt Northern part of *England*, and is almoſt 56 degrees Latitude, and 3 degrees Longitude, Weſt of *London*. Thus *St. George*'s *Channel*, by the coaſt of *Wales*, will be found in 52 degrees Latitude, and 6 degrees Weſt Longitude, and lies almoſt due Weſt of *London*. The *Britiſh* Ocean may likewiſe be ſeen between 1 and 2 degrees Eaſt Longitude, and 54 degrees Latitude; the *Iriſh* Sea is alſo in 54 degrees Latitude, but differs in Longitude, being about five degrees Weſt Longitude from *London*. It is preſumed this will be ſufficient for Practitioners; if not, they may eaſily furniſh themſelves with more examples, by inſpecting the Map, and comparing the different places with the bottom and ſides thereof. By this eaſy method the Longitude and Latitude of every place, not only of *England*, but the whole world, may be moſt eaſily and expeditiouſly aſcertained; and *vice verſa*, by knowing the Longitude and Latitude, we may readily find the place required. For inſtance, it is required what place is ſituated in 51 degrees of Latitude, and 2 degrees Weſt Longitude? Anſwer: *Saliſbury*. What place is ſituated in 51½ degrees Latitude, and 2½ degrees Weſt Longitude? Anſwer: *Briſtol*. What place is ſituated in 51 degrees Latitude, and one degree Weſt Longitude? Anſwer: *Wincheſter*. What place has 55 degrees Latitude, and three degrees Weſt Longitude? Anſwer: *Carliſle*. And laſtly, what place has 52 degrees Latitude, and five degrees Weſt Longitude? Anſwer: *St. David's* in *Pembrokeſhire*. The Rivers are deſcribed by *crooked black lines*, bending according to the courſe of thoſe Rivers which they repreſent: For inſtance, the *Severn*, which you will ſee in ſomewhat more than 51 degrees Latitude, and 3 degrees Weſt Longitude. This River will be eaſily found, by examining the left hand ſide of the Map, and attending to the Latitude, &c. It takes its riſe in *North Wales*, running for the moſt part South, falls into the *Briſtol Channel*, and communicates by *St. George's Channel* with the *Iriſh Sea.* The *Thames* will be found on the right hand ſide of the Map, between 51 and 52 degrees Latitude, and one degree Eaſt Longitude; it takes its riſe in *Glouceſterſhire*, and runs from Weſt to Eaſt, through the cities of *Oxford* and *London.* There are alſo ſeveral conſiderable Rivers that take their riſe in *Staffordſhire* and *Yorkſhire*; thoſe Rivers all unite in one, which is called the *Humber* (in *Yorkſhire*) emptying itſelf into the *Britiſh* Ocean, as may be ſeen on the right hand ſide of the Map, in 53½ degrees Latitude, and no degrees Longitude. The *Engliſh* Channel lies South of *London*, and is very conſpicuous at the bottom of the Map; on the coaſt of this Channel is *Dartmouth, Weymouth, Iſle of Wight, Spithead, Chicheſter, Shoreham, Haſtings*, and ſo on to the Streights of *Dover*, which joins the *Engliſh* Channel to the *Britiſh German* Ocean.

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* It muſt be remembered (as before obſerved) that the upper and lower lines of a Map are the lines of Longitude on which the Longitude is meaſured; and on the ſides, are the lines of Latitude, by which the Latitude is meaſured. See the figures on the ſides.

The diſtances of places from each other in thoſe Maps, is meaſured by a ſcale of miles, which are generally drawn in all Maps that repreſent but a ſmall part of the Earth; as in the Map of *England, France, Spain*, or a County, &c. In this Map of *England*, the ſcale will be ſeen in the South Weſt corner of the Map. To meaſure the diſtance of places in this Map, you muſt proceed with a pair of Compaſſes, as taught in the other Maps, with this difference only, that inſtead of applying the Compaſſes to the ſides of the Map, you muſt apply them to the ſcale of miles, in ſhort diſtances. For example, to meaſure the diſtance between *London* and *Rocheſter* *, fix one foot of the Compaſſes at *London*, extend the other foot to *Rocheſter*, convey the Compaſſes, thus extended, to the ſcale of miles, and you will find 40 miles included between the two feet, and tells you that *Rocheſter* is 40 miles from *London*; and the Map will ſhew that it lies South Eaſt. Again, fix one foot of the Compaſſes at *London*, extend the other foot to *Windſor* (which is Weſt of *London*) take the Compaſſes, thus opened, to the ſcale of miles, and you will find 25 miles included between the feet of the Compaſſes, and is the exact diſtance of *Windſor* from the centre of *London*. Thus *Feverſham*, in *Kent*, will be found near 45 miles Eaſt of *London*. But when you are to meaſure diſtances that exceed the Scale, which is only for 45 miles, we may then have recourſe to the ſides, allowing 70 miles to a degree; obſerving that one degree, or 70 miles, is included between each of the figures on the ſides.

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* In meaſuring you muſt not fix your compaſſes in the word or name of a place, but in the o, or other mark, that repreſents the place itſelf.

For example, place one foot of the Compaſſes at *London*, and the other at *Wincheſter* in *Hants*, being Weſt of *London*; convey the Compaſſes, thus extended, to the ſide of the Map, and you will find they will reach from 51 to near 52 degrees, and ſhews that (as 70 miles is included between each of thoſe figures) *Wincheſter* is nearly 70 miles Weſt of *London*. Again, look North-eaſt of *London*, and a little above 52 degrees of Latitude, on the right hand ſide of the Map, you will find *Ipſwich*, in *Suffolk*. Meaſure from this place with your Compaſſes to *Londou*. then apply the opened Compaſſes from the figure 52 to 53 on the ſide, and you will find included exactly one degree, which is 70 miles, the true diſtance of the centre, or middle of *Ipſwich*, from the centre of *London*. *Ely*, in *Cambridgeſhire*, which lies due North of *London*, will be found to meaſure not quite one degree, it being but 68 miles from *London*, and by this method we may pretty accurately meaſure the moſt diſtant parts of *England*. But when we extend our meaſure to the utmoſt parts of *England*, as *Cumberland*, *Scotland*, &c. we ſhall find our meaſure come, perhaps, a trifle ſhort; as in ſo great a diſtance there will be many turnings in the road, which are too numerous to be minutely particularized in a Map; therefore, as we meaſure by the Map in a direct ſtrait line to the place required, it will be found neceſſary to make a ſmall allowance for the windings. For example, the City of *York* is about 196 miles due North from *London*; by meaſuring with the Compaſſes from *London* to *York*, and applying the extended Compaſſes to the ſide of the Map, you will find them to include about two degrees and three quarters, which is 193 miles; and allowing three miles for the turnings of the road, will bring it to 196 miles, which is ſufficiently perfect for any common meaſurement or travelling. Again, from *London* to *Carliſle*, the capital of *Cumberland*, is 250 miles; on meaſuring the ſame by the Map, we will find it better than three degrees and a half, which is about 248 miles; and comes ſufficiently near for any general computation. And laſtly, *Plymouth* is ſituated about 212 miles South Weſt of *London*; on meaſuring the diſtance by the Map, you will find it about three degrees, that is 210 miles, which is tolerably accurate. It is needleſs to ſay any more relative to Maps; if what has already been mentioned be properly attended to, the Learner will have a compleat and ſufficient knowledge in all kind of Maps. I could have added more Examples, but it will be more entertaining, and at the ſame time more inſtructive to the

the young Proficients, to make thoſe inquiries themſelves; and, for their farther improvement, I have added a ſhort Geographical deſcription of the *Britiſh* Empire.

SECT. XIX.

The Modern Geography of our British *Empire.*

THE *Britiſh* Empire lies on the Weſtern part of *Europe*, and is wholly ſurrounded by the ſea: It contains *Great Britain*, *Ireland*, and the Iſles thereunto adjoining, as expreſſed in this Map.

Great Britain is in length 630 miles, but of different breadths in different places; is ſurrounded by the ſea, and contains *England*, *Scotland*, and *Wales*; but the largeſt Iſland in Europe.

England is parted on the North from *Scotland* by the Rivers *Tweed* and *Solway*; on the Eaſt it is waſhed by the *German* Ocean; on the South by the *Engliſh* Channel; and on the Weſt parted from *Wales* by a line drawn from the Iſle of *Angleſey* round *Flintſhire*, by *Shropſhire* and *Herefordſhire*, down to the end of the River *Severn*.

England is about 360 miles long, and 300 broad :—Contains 40 Counties: *Wales* is 124 miles long, and 100 broad, and contains 12 Counties. The name and chief Town of each County, with its diſtance from *London*, the capital City, the number of Pariſhes, Market Towns, and Members of Parliament, are expreſſed in the following Table.

Counties	Circ.	Mark. Towns	Par.	Memb. Par.	Chief Towns	Dist. fr. Lond.	Counties	Circ.	Towns Mark.	Par.	Memb. Parl.	Chief Towns	Dist. fr. Lond.
Bedfordſhire	73	10	116	4	Bedford	47	Rutlandſhire	40	2	48	2	Okenam	94
Berkſhire	120	12	140	9	Reading	39	Shropſhire	136	17	170	14	Shrewſbury	155
Buckinghamſhire	138	16	185	14	Buckingham	57	Somerſetſhire	204	35	385	18	Briſtol	117
Cambridgeſhire.	130	9	163	8	Cambridge	51	Staffordſhire	141	19	150	9	Stafford	125
Cheſhire	112	13	68	4	Cheſter	182	Suffolk	140	30	575	16	Ipſwich	69
Cornwall	150	26	161	44	Launceſton	210	Surrey	112	13	140	14	Guildford	30
Cumberland	168	15	90	6	Carliſle	301	Suſſex	158	17	312	28	Chicheſter	63
Derbyſhire	13	11	106	4	Derby	126	Warwickſhire	135	14	158	7	Warwick	93
Devonſhire	200	39	394	26	Exeter	169	Weſtmoreland	120	8	26	4	Appleby	267
Dorſetſhire	150	22	248	20	Dorcheſter	123	Wiltſhire	140	22	304	34	Saliſbury	80
Durham	107	9	118	4	Durham	256	Worceſterſhire	130	12	152	9	Worceſter	112
Eſſex	146	27	415	8	Colcheſter	51	Yorkſhire	320	56	563	30	York	197
Gloceſterſhire	138	30	280	8	Gloceſter	104							
Hampſhire	100	24	253	24	Southampton	76	NORTH WALES.						
Hertfordſhire	130	20	120	6	Hertford	21	Angleſey	80	3	74	2	Beaumaris	241
Herefordſhire	12	8	176	8	Hereford	132	Carnarvonſhire	110	5	68	2	Carnarvon	251
Huntingdonſhire	67	6	79	4	Huntingdon	57	Denbighſhire	116	6	57	2	Denbigh	209
Kent	160	33	408	18	Canterbury	56	Flintſhire	82	5	28	2	Flint	194
Lancaſhire	170	27	61	14	Lancaſter	233	Merionethſhire	108	3	37	1	Harlech	223
Leiceſterſhire	96	12	192	4	Leiceſter	99	Montgomeryſhire	94	5	47	2	Montgomery	161
Lincolnſhire	180	35	63	12	Lincoln	135							
Middleſex	81	6	200	6	LONDON	—	SOUTH WALES.						
Monmouthſhire	8	7	127	4	Monmouth	129	Brecknockſhire	106	4	61	2	Brecknock	163
Norfolk	140	32	660	12	Norwich	109	Cardiganſhire	94	5	77	2	Cardigan	224
Northamptonſhire	120	14	326	9	Northampton	66	Carmarthenſhire	108	5	87	2	Carmarthen	208
Northumberland	160	13	460	8	Newcaſtle	270	Glamorganſhire	112	9	118	2	Cardiff	165
Nottinghamſhire	90	9	168	8	Nottingham	121	Pembrokeſhire	93	7	45	3	Pembroke	236
Oxfordſhire	130	14	286	9	Oxford	53	Radnorſhire	90	4	53	2	Radnor	150

The Principal ROADS *and* CROSS ROADS *from* LONDON *to other Places over* ENGLAND *and* WALES, *in* ENGLISH *meaſured Miles; alphabetically diſpoſed.*

N. B. m *ſtands for Miles, and* f *for Furlongs.*

1. From LONDON	m.	f.
To ABERISTWITH	199	0
Acton	8	0
Uxbridge	15	0
Beconsfield	27	0
Chipping Wickham	29	0
Tetſworth	45	0
Iſlip	57	0
Enſton	70	0
Broadway	91	0
Perſhore	103	0
Worceſter	112	0
Bromyard	124	0
Lemſter	136	0
Preſlain	149	0
Ithen River	162	0
Riadergowy	171	0
Aberiſtwith	199	0
2. To BRISTOL	117	0
Brentford	10	1
Hounſlow	12	3
Colebrook	18	7
Maindenhead	27	6
Twiford	35	2
Reading	40	2
Theal	44	5
Woolhampton	50	3
Thatham	53	5
Newbury	56	6
Hungerford	69	2
Marlborough	75	3
Caln	88	0
Chippenham	93	6
Marſhfield	103	0
Briſtol	117	0
3. To BERWICK	339	4
Waltham	12	0
Ware	22	2
Puckeridge	27	4
Royſton	38	0
Huntingdon	57	4
Stilton	69	0
Stamford	83	0
Grantham	104	2
Newark	118	2
Tuxford	131	4
Doncaſter	155	4
Wentbridge	165	2
Tadcaſter	182	2
York Micklegate	192	0
Boroughbridge	200	0
Topcliff	215	0
Northallerton	229	2

Darlington

	m.	f.
Darlington	243	2
Durham	262	2
Cheſter in the Str.	268	0
Newcaſtle	276	2
Morpeth	291	0
Alnwick	310	0
Belford	323	2
Berwick	339	4

4. To CHICHESTER, SUSSEX	66	0
Tooting	7	0
Ewell	14	0
Leatherhead	20	0
Darking	24	0
Stone-ſtreet	30	0
Billinghurſt	41	0
Amberly	51	0
Arundel	55	0
Chicheſter	66	0

5. To DERBY	126	4
8. Dunſtable	34	4
Woobourne	43	4
Newport Pagnel	53	0
Northampton	67	0
Harborough	85	0
Leiceſter	99	0
Mount Sorrel	104	0
Loughborough	107	0
Kegworth	112	0
Derby	126	4

6. DOVER	71	4
Deptford	5	0
Crayford	13	6
Dartford	16	0
Chaulkſtreet	24	4
Rocheſter	29	6
Sittingbourn	41	0
Bocton-Street	50	4
Canterbury	56	2
Dover	71	4

7. To St. DAVID's in Pembrokeſhire	269	5
2. Maidenhead	27	6
Henley	35	7
Dorcheſter	49	3
Abingdon	55	3
Farringdon	68	5
Barnſley	83	7
Glouceſter	102	2
Michael Dean	113	7
Monmouth	127	0
Newchurch	139	2
Newport	151	2
Cardiff	163	0
Cowbridge	175	2
Bridge-end, Burton's Fer.	197	2
Llanellthy	214	1
Llanſtephan	227	5
Haverford Weſt	354	3
St. *David's*	269	5

Another Way.

From *Farringdon* to Cirenceſter	14	0
Strand	10	0
Chepſtow	20	0
Rock and Fount	6	0
Newport	6	0
And is the neareſt by computed Miles.		4

8. To

	m.	f.
8. To HOLY HEAD	269	4
Barnet	11	7
St. Albans	21	5
Dunſtable	34	2
Brickhil	43	7
Stoney Stratford	53	1
Towceſter	60	1
Daventry	72	7
Dunchurch	80	7
Coventry	92	2
Coleſhill	103	5
Litchfield	118	5
Rugley	126	2
Stone	140	7
StablefordBridge	147	4
Nantwich	162	4
Tarperley	172	5
Cheſter	182	1
Harding	189	2
Northorp	194	4
Denbigh	209	2
Aberconway	229	5
Beaumaris	241	5
Beddedar	260	6
Holy Head	269	4
9. To KING'S LYNN, Norfolk	98	4
3. Puckeridge	27	4
Barkway	35	4
Fowlmire	43	0
Cambridge	52	0
Stretham	65	0
Ely	69	0
Littleport	74	0
Southery	80	0
Downham	87	0

	m.	f.
Seeching	94	2
King's Lynn	98	4
10. To LINCOLN thro' Royſton	129	0
3. Stilton	69	0
Peterborough	76	0
Deeping	87	0
Bourn	95	0
Sleaford	115	0
Lincoln	129	0
The beſt Road is thro' *Grantham*	104	2
Lincoln	129	0
11. To LAND'S END, Cornwal	300	6
Brentford	10	0
Staines	19	0
Bagſhot	29	0
Hartley Row	38	0
Baſingſtoke	48	1
Andover	66	2
Saliſbury	83	6
Shaftſbury	103	0
Sherborne	128	4
Crewkherne	133	2
Axminſter	146	4
Honiton	156	0
Rockbere	166	0
Exeter	172	4
Chedleigh	182	0
Aſhburton	191	0
Brent	199	0
Plymouth	215	6
Loo	232	0
Foy	240	4
Trewardeth	244	3

Tregony

	m.	f.
Tregony	256	6
Phily	263	0
Market Jew	287	0
Penzance	290	0
St. Burien	296	0
Lands End, at *Se-nan*	300	6

12. To Norwich 108 0

Epping	17	0
Hockerill	30	0
Cheſterford	45	0
Newmarket	60	0
Barton Mills	68	0
Thetford	79	0
Attleborough	93	0
Norwich	108	0

13. To Nottingham. 123 0

8. St. Albans	21	5
Luton	29	5
Silloe	38	5
Bedford	47	4
Wellingborough	66	0
Kettering	73	0
Rockingham	83	0
Uppingham	87	0
Oakham	94	0
MeltonMowbray	104	0
Nottingham	123	0

Another, and the beſt Road to Nottingham is thro' *Loughborough* 107 0

Nottingham	124	0

14. To Oxford 53 0

	m.	f.
1. Tetſworth	45	0
Wheatly	50	0
Oxford	53	0

15 To Portsmouth 73 4

Wandſworth	6	4
Kingſton	12	4
Cobham	20	0
Guildford	30	0
Lippock	46	6
Petersfield	55	2
Harridon	62	4
Portſey Bridge	69	0
Portſmouth	73	4

16. To Scarborough 191 0

10. Lincoln	129	0
Spittle	140	0
Winteringham	158	0
Brough Yorkſh.	159	0
South Cave	162	0
Drisfield	174	0
Scarborough	191	0

Another and the beſt Road from Spittle above.

Bring	152	0
Bucton	163	0
Hull	164	0
Beverley	173	0
Driffield	187	0
Scarborough	208	0

17. To Wells 120 0

2. Marlborough	75	3
Devizes	89	0

	m.	f.
Trowbridge	96	0
Phillips Norton	104	0
Chilcompton	115	0
Wells	120	0

CROSS ROADS.

From OXFORD to BRISTOL	68	0
Fifield	9	0
Farringdon	18	0
Howorth	24	0
Burton	31	0
Malmſbury	42	0
Luckington	49	0
Puckle Ch.	60	0
Briſtol	68	0

From CAMBRIDGE to OXFORD	80	0
Gaulengay	15	0
Bedford	28	0
Newport Pagnel	41	3
Buckingham	55	2
Burceſter	67	0
Oxford	80	0

From YORK to WEST CHESTER	106	0
	m.	f.
Tadcaſter	9	6
Thorner	17	7
Leeds	25	0
Burſtal	32	0
Ealand	40	0
Rochdale	55	0
Warrington	66	0
Eccles	72	0
Fordſham	86	0
Cheſter	106	0

From MANCHESTER to DERBY	55	0
Stopford	6	4
Shancroſs	17	4
Buckſton	23	0
Braſington	39	4
Weſtonund	49	0
Derby	55	0

N. B. From Wenteringham to Brough, or from Barton to Hull, is only croſs the River *Humber*.

To SCARBOROUGH by YORK.		
3. York	192	0
Malton	212	0
Scarborough	235	0

The Rivers of principal note in *England* are, the *Thames*, *Severn*, *Trent*, *Humber*, *Medway*, *Ouſe*, *Tyne*, *Avon*, *Derwent*, *Merſey*, &c. In *Wales*, the *Wye* and *Dee*.

The moſt noted Hills in *England* are, the *Peak* in *Derbyſhire*; *Malvern* in *Worceſterſhire*; *Mendip Hills* in *Somerſetſhire*. In *Wales*, *Snowden Hills*, *Plinlimon*, and the *Black Mountains*.

In *England* are twenty-two Biſhopricks; in *Wales* four; which make in all twenty-ſix Biſhops; of which two are Arch-Biſhops, *Canterbury* and *York*. There are alſo in *England* two famous Univerſities, *Oxford* and *Cambridge*: The former of which contains twenty Colleges and five Halls; the latter contains twelve Colleges and four Halls. In *Wales* there is no Univerſity.

The eſtabliſhed Religion in *England* and *Wales* is Lutheraniſm. The inhabitants are about ſeven millions in number; of which almoſt one million and a half live in *London*.

Scotland lies on the North of *England*, parted from it by the Rivers *Tweed* and *Solway*; and is about 300 miles long and 150 broad. It is divided by the River *Tay* (which runs near the middle of it) into two parts, Highlands and Lowlands, which contain thirty-four ſhires, in which are many populous towns and villages, but the capital City is *Edinburgh*, diſtant from *London* about 270 miles North.

In the Lowlands (next *England*) are theſe twenty-two Counties; 1. *Tiviotdale*, 2. *March*, 3. *Tweedale*, 4. *Liddeſdale*, 5. *Eſhdale*, 6. *Anandale*, 7. *Niddeſdale*, 8. *Galloway*, 9. *Carrick*, 10. *Kyle*, 11. *Cunningham*, 12 *Arran*, 13. *Clydeſdale*, 14. *Lenox*, 15. *Sterling*, 16. *Fife*, 17. *Strathern*, 18. *Menteith*, 19. *Argyle*, 20. *Cantire*. 21. *Lorne*, and 22. *Lothian*.

In the Highlands are theſe thirteen Counties, 1. *Lochabar*, 2. *Broadalbin*, 3. *Perth*, 4. *Athol*, 5. *Angus*, 6. *Merns*, 7. *Mar*, 8. *Buchan*, 9. *Murray*, 10. *Roſs*, 11. *Sutherland*, 12. *Caithneſs*, and *Strathnavern*.

The chief Cities are the four Univerſities, viz. *Edinburgh*, *Aberdeen*, *Glaſgow*, and *St. Andrews*.

The principal Rivers in *Scotland* are the *Tweed*, *Clyde*, *Tay*, and *Spay*, all navigable; beſides many Lakes, of which *Lemund* and *Neſs* are the moſt remarkable.

The Mountains of note are the *Chiviot Hills*, and thoſe of *Albany*.

The eſtabliſhed Religion here is the Preſbyterian; conſequently they have no Biſhops. The inhabitants about one million and a half.

Ireland lies Weſt of *England*, is wholly ſurrounded by the ſea, and parted from *Great*

Great Britain by St. *George's* Channel, which in ſome places is 60 miles over, in others not ſo much as 20. *Ireland* is in length about 300 miles, in breadth about 150. 'Tis uſually divided into four Provinces—*Leinſter*, *Munſter*, *Connaught*, and *Ulſter*, which contain thirty-two Counties, in which are ſeveral Cities and populous towns, but the capital is *Dublin*, about 250 miles North Weſt of London.

In *Leinſter* are twelve Counties, 1. *Eaſt Meath*, 2. *Weſt Meath*, 3. *Louth*, 4. *Longford*, 5. *King's County*, 6. *Queen's County*, 7. *Catherlough*, 8. *Kilkenny*, 9. *Kildare*, 10. *Wexford*, 11. *Wicklow*, and 12. *Dublin*.

In *Munſter* are five Counties, 1. *Cork*, 2. *Kerry*, 3. *Limerick*, 4. *Tipperary*, and 5. *Waterford*.

In *Connaught* are ſix Counties, 1. *Sligo*, 2 *Leitrim*, 3. *Roſcommon*, 4. *Galway*, 5. *Mayo*, and 6 *Clare*.

In *Ulſter* are nine Counties, 1. *Antrim*, 2. *Down*, 3 *Armagh*, 4. *Cavan*, 5. *Londonderry*, 6. *Donnegal*, 7. *Fermanagh*, 8. *Tyrone*, and 9. *Monagan*.

Their noted Cities beſides *Dublin*, are *Limerick*, *Waterford*, *Kinſale*, *Cork*, *Athlone*, *Galloway*, *Londonderry*, &c. They have four Arch-Biſhops, viz. *Armagh*, *Dublin*, *Caſhel*, and *Tuam*; and eighteen Biſhopricks. *Dublin*

lin is their only Univerſity, and is one of the largeſt and fineſt Cities in Europe.

The moſt noted Rivers here are the *Shannon*, *Barrow*, *Saver*, *Boyn*, *Nuor*, and *Blackwater*.——The Country abounds in Lakes, but the chief are *Lough Earn*, *Lough Neagh*, and *Lough Corrib*.

The chief Mountains are *Knock Patrick*, *Slew Bloemy*, and *Curlew Hills*.

The Religion eſtabliſhed here is Lutheraniſm as in *England*; but the inhabitants profeſſing Popery, are more than three parts in four of the whole kingdom. The people are about one million.

The Iſlands round *Great Britain* are the *Shetland* and *Orkneys*, north of *Scotland*; they are many but ſmall, the chief *Maitland* and *Pomona*—The Weſtern Iſlands, *Lewis*, *Sky*, *Mull*, *Viſt*, *Jara*, *Ila*, *Annan*, and *Bute*—In the *Iriſh* Channel are *Man* and *Angleſey*.—In the *Engliſh* Channel are *Wight*, *Jerſey*, *Guernſey*, *Sark*, and *Alderney*. And at the Land's end are the little, but dangerous Iſles of *Scilly*.

SECT.

SECT. XX.

A Deſcription of Commodore Anſon's *Voyage round the World.*

THE *Engliſh* foreſeeing a war would unavoidably happen with *Spain*, the Government came to the reſolution of ſending a ſquadron of ſhips into the *South Seas* to make repriſals on the *Spaniards* in that part of the world. Accordingly Commodore *Anſon*, having received orders for that expedition, ſet ſail in the *Centurion*, with ſix or ſeven ſhips more from *Portſmouth*, the 18th of *September* 1740; but meeting with contrary winds, did not arrive at *Madeira* till forty days after, viz. *October* 25.—This is a ſmall Iſland belonging to the *Portugueſe*, and is famous for its excellent wine.

On the third of *November* he left the *Madeiras* bound for St. *Catherine*'s, a ſmall Iſland on the coaſt of *Braſil* in *South America*, where (by the benefit of the Trade Winds, after croſſing the Equinoctial * line the 28th of *November*) he came ſafe to an anchor on the 18th of *December*.

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* The *Equinoctial* is here meant the ſame as *Equator*.

Staying here to refreſh the crew, and refit his ſhips, till the 18th of January, he ſet ſail, and purſued his voyage to the bay of *St. Julian* on the coaſt of *Magellan*, where he anchored the firſt of *February*. This is a large, wild, and deſolate country, claimed by the *Spaniards*, but they have made no ſettlements in it. The natives are repreſented as giants.

The Commodore weighed anchor at *St. Julian* the 27th of *February*, propoſing to attack *Baldivia*, a principal port of the *Spaniards*, on the oppoſite ſide of the continent in *Chili*; but meeting with dreadful ſtorms, which ſeparated his fleet in paſſing round *Cape Horn*, he was obliged to ſteer directly for *Juan Fernandes*, an uninhabited iſland about 110 leagues from the coaſt of *Chili*, where he did not arrive till the 9th of *June*, 1741. This iſland abounds in beautiful lawns, fine paſturages, &c. and is the property of *Spain*.

Having continued there upwards of three months with a view of recovering his men, who were moſt of them ill with the ſcurvy, as well as for the ſeparated ſhips to rejoin him; on the 19th of *September* he left *Juan Fernandes*, and after taking ſeveral ſmall prizes on the coaſt of *Chili*, arrived at *Paita*, a large ſea port in *Peru*, near the Equinoctial,

noctial, which he took, plundered, and burnt.

From hence the ſquadron ſailed away on the 16th of *November*, and reached the iſland of *Quibo* near *Panama*, on the third of *December*; and having taken in wood and water, left it on the 9th of *December*. The next day he took a ſmall prize, and then ſailed for the coaſt of *Mexico*, to cruize off the port of *Acapulco*, in hopes of taking a rich galleon, belonging to the *Spaniards*, which uſually ſails early in the ſpring from thence to *Manilla*, one of the *Phillippian* Iſles in *Aſia*.

The Governor of *Acapulco* getting intelligence of the *Engliſh* being upon their coaſt, deferred the ſailing of that ſhip till the year following; on which diſappointment, the Commodore ſteered away to *Chequetan*, a port farther North; and having taken in freſh water, &c. departed from the coaſt of *Mexico* the 6th of *May* 1742 for *China*. But meeting with great diſtreſſes in his long voyage over the vaſt *Pacific Ocean*, was obliged to get to the firſt land. On the 27th of *Auguſt* they made the *Ladrone Iſles*, and in a day or two more got into *Tinian*, one of the moſt pleaſant; which, though uninhabited, was found full of cattle, fruits, and game. Theſe iſles belong to *Spain*.

Here Mr. *Anſon* met with diſtreſſes greater than any he had encountered before: for, on the 22d of *September*, a violent ſtorm of wind ariſing, his ſhip was driven from its anchor, and forced to ſea, leaving himſelf and the greater part of his men on ſhore; who concluded that the ſhip would be inevitably loſt, and all on board periſh. But whilſt they were contriving a method to eſcape if poſſible, the ſhip, to their inexpreſſible joy, returned on the 11th of *October*, after having been abſent 19 days, and all the hands in the greateſt diſtreſs.—The Commodore having recovered his ſhip, and ſufficiently refreſhed his men, departed from *Tinian* the 21ſt of *October*; and paſſing between the iſlands *Formoſa* and *Luconia*, made the coaſt of *China* the 5th of *November*; and on the 12th anchored at the little iſland of *Macao*, belonging to the *Portugueze*, near *Canton*.

Mr. *Anſon* having here new rigged his ſhip and got in freſh ſtores, weighed anchor the 19th of *April* 1743, and ſtood to ſea, where he ſoon came to a reſolution of ſteering back and cruizing off the *Phillippian Iſles* for the *Manilla* ſhip, which was to have ſailed from *Acapulco* to theſe parts the year before. Where plying till the 1ſt of *July*, the colours of the long expected ſhip appeared in view; which they ſoon came up with, and after a ſmart engagement took. The Commodore returned with his prize to *Canton*, and on the 11th of *July* came to an anchor off *Macao* again.—This ſhip and cargo proved to be worth almoſt a million of money.

Having finiſhed his affairs at *Canton*, and ſold his prize, the Commodore ſet ſail the 15th of *December*, and on the 3d of *January* came to an anchor in the ſtreights of *Sunda*; where he continued to take in wood and water till the 8th, then ſtanding for the *Cape of Good Hope*, the moſt Southern part of *Africa*, anchored in *Table Bay* the 11th of *March*. The ſettlements here belong to the *Dutch*.

On the 3d of *April* 1744, his buſineſs being compleated at the Cape, he put to ſea again. On the 19th was in ſight of the Iſland *St. Helena*, but did not touch there. The 10th of *June* he ſpoke with an *Engliſh* ſhip bound to *Philadelphia*, which gave him intelligence of a war with *France*. This greatly alarmed him; but bearing up with his uſual intrepidity, he ſteered clear of the *French* fleet, which was then at ſea, and on the 15th of the ſame month arrived ſafe at an anchor at *Portſmouth*, to the great joy of the whole crew, as well as their friends;

after an abſence of almoſt four years, and having loſt one day in his reckoning *.

S E C T. XXI.

Of the Trade Winds.

I Cannot conclude this part without obſerving the wonderful phænomenon of the Trade Winds; I mean ſuch as always blow from one and the ſame quarter of the Globe. They are repreſented in the Maps by the ſhades in and about the Torrid Zone, and their direction is conſtantly the way the little arrows ſeem directed. In the *Ethiopic*, *Atlantic*, and *Pacifick Oceans* (to 30 degrees from the Equinoctial Line) they are continually found to blow towards the West;

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* This is eaſy to be accounted for: For, if a man travel the ſame way with the Sun, he will lengthen his way a little, *i. e.* he will find it to be ſomething longer than it would have been, had he ſtaid at the place he came from. This ſmall addition being made to each day of his tour round the Globe, will amount in all to one whole day; conſequently he muſt reckon, on his return, one day leſs than they do, who have continued ſtill at the ſame place. For it is evident, that the Sun muſt have gone once more by them, than by him, who journeyed round the Earth with it.

Weſt; but in the bay of *Bengal*, *Arabian*, *Chineſe*, and *Indian* Seas, the winds vary, blowing one half of the year one way, and the other the contrary; *i. e.* in the ſummer they blow to the N. E. but in the winter to the S. W. Theſe are called the periodical Trade Winds, and by the Sailors Monſoons*. As the Arrows point their courſe on the Globes, ſo the times of ſhifting are denoted by the months thereto annexed, All ſhips which trade in theſe parts are obliged to obſerve the wonted ſeaſons; by that means they never fail of a fair wind to waſt them to the wiſhed for port, and another to return them to the haven where they would be.

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* At the changing or breaking up of the Monſoons, which happens about *March* and *September*, there are dreadful ſtorms of wind, thunder, and rain; which, agitating the Atmoſphere to great diſtances, are perhaps the cauſe why theſe months are ſo windy in this part of the world. From thirty degrees towards the Poles the winds are variable, though they blow from the Weſt oftener than any other point.

SECT. XXII.

Sir Iſaac Newton's *Account of the Tides.*

THE *Tides* are occaſioned by the action or attraction of the *Moon* upon the Waters. By the *Tide* we underſtand the ebbing and flowing of the Sea, which twice happens in the time of 24 hours and about 50 minutes. The *Tide* is regular, though it doth not happen at the ſame time, nor after the ſame manner in all places; for the Sea ſwells with us as oft as the Moon paſſeth our Meridian, whether above or under our *Horizon*; and it falls again when the *Moon* is on the *Horizon*, whether it riſes or ſets; for we find that the Sea in its motion keeps a proportion of time with the Moon, for as the Moon riſeth every day three quarters of an hour and five minutes later; ſo at the ſame interval doth the Sea riſe. That part of the Sea which is directly under the Moon will be more attracted by it than the reſt: there the Ocean muſt ſwell or riſe, and the waters will run from other parts thither. But from hence it will not follow that there ſhould be *Tides* produced in Rivers, and in land and ſea lakes, &c. of little or no breadth, becauſe they are ſo narrow that the Moon cannot act ſtronger on one part than on another; and thus, there being no difference of attraction, there is no reaſon why one part ſhould ſwell or riſe more than another, for the attraction being equal, the water cannot ſhift or move from one place to another ſo as to cauſe a flux or reflux.

If the Earth and Sea was not affected by the actions of the *Sun* and *Moon*, it is not to be doubted but the Ocean would continue in a perfect ſtagnation, always at the ſame height, without ever ebbing or flowing; but it being demonſtrated that the *Sun* and *Moon* have a like principle of gravitation towards their center, and that the Earth is within the activity of their attraction, it will plainly follow that the equality of the preſſure of gravity towards the center will thereby be diſturbed; and though the ſmalneſs of their forces, in reſpect to their gravitation towards the Earth's center, render them altogether imperceptible by any experiment we can deviſe, yet the Ocean being fluid, and yielding to the leaſt force, by its riſing ſhews where it is *moſt* attracted, and by its ſinking ſhews where it is *leaſt* attracted. Thus as the *Tides* are occaſioned by the action of the *Moon* upon the waters, if ſhe were brought within 30 ſemidiameters of the Earth to its center,

center, the *Tides* muſt be attracted or ſwell to a prodigious height. All the low countries near the Sea coaſt would be rendered uninhabitable, the Sea for many miles overflowing them every time the *Moon* paſſed our Meridian either above or below. Our *Tides* which now riſe to nine or ten feet, would then ſwell to ſixty eight, and in many places to a greater height. We can ſcarce figure to ourſelves the impetuoſity of ſuch a heap of waters, ſetting in ſucceſſively from the Ocean on the coaſt, and falling back with equal fury. The *Tides* are greateſt of all above the Equator, or middle of the Earth; for the greater the circle in which the *Tides* revolve, the greater will be their agitation; and was the *Moon* placed in the Pole, the *Tide* would remain immoveable about that Pole. Nor are the *Tides* always largeſt preciſely at the time of the new and full *Moons*; by reaſon of the water's *Libration* *, thoſe *Tides* are ſomewhat changed, being greateſt about three *Tides* later. For as the Moon goes eaſtward round her orbit in a month, and the Earth turns Eaſtward round its axis every 24 hours, thus the *Moon* makes *part* of a revolution in the time that the Earth makes a *whole* rotation, and therefore the Earth muſt turn as much more than round its axis, before the ſame place can come even with the *Moon* again, as the *Moon* has advanced in her orbit during that interval of time.

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* What is meant by this Libration of the Waters is, that although the *action* of the *Luminaries* ſhould ceaſe, yet the flux and reflux of the Sea would for ſome time continue (owing to its firſt great agitation). This conſervation of the impreſſed motion diminiſhes the difference that otherwiſe would be between two conſequent *Tides*, and is the reaſon why the higheſt *Spring Tides* are not preciſely on the *new* and *full Moons*, nor the *Neaps* on the *Quarters*; but generally they are the third *Tides* after them, and ſometimes later.

Wherever the *Moon* is, by its attractive quality, it always draws the water towards it, which forms an oval; and the *Moon* ſhifting her poſition as ſhe turns round the Earth once a day, this oval of water ſhifts with her, occaſioning thereby two floods and ebbs, obſervable in each 25 hours. And where the *Moon* is vertical, or in the Meridian, there the *Tides* are higheſt; but when the *Moon* is in the Horizon, the *Tides* are then loweſt.

It ſhould further be obſerved, that the different poſition of the *Moon* in her orb makes ſome difference in the *Tides*; becauſe in the diurnal revolution of the *Moon*, that *Tide* of the two ought to be the greateſt, in which the *Moon* is neareſt the *Zenith* or *Nadir* of the place: therefore with us, the *Moon* being neareſt our *Zenith* in the Northern ſigns* when above the Horizon, muſt then cauſe the greateſt of the two *Tides* when ſhe paſſeth our Meridian. But being neareſt the *Nadir* when in the Southern Signs †, ſhe makes the greateſt *Tide* here when ſhe paſſeth the oppoſite Meridian below the Horizon. The *Spring Tides* upon the *New* and *Full* Moons, and the *Neap Tides* on the quarters, are occaſioned by the attractive force of the Sun, in the *new* and *full*, conſpiring with the attraction of the Moon, and producing a ſtrong *Tide* by their united forces; whereas in the quarters, the *Sun raiſeth* the water where the Moon depreſſes it; and on the contrary, ſo as the *Tides* are made only by the difference of their attraction. It has before been obſerved, that the Moon, by attracting the waters underneath it, occaſions thoſe waters to riſe above the other parts: thus there is always a ſwell of waters under the Moon of a *ſpheroidical* form (called high water) by which we ſhall explain why the *Equinoctial Spring Tides* in *March* and *September*, are the *higheſt*, and

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* The Northern Signs are

Aris.	*Taurus.*	*Gemini*	*Cancer.*	*Leo.*	*Virgo.*
♈	♉	♊	♋	♌	♍

† The Southern Signs are

Libra.	*Scorpio.*	*Sagitarius.*	*Capricornus*	*Aquarius.*	*Piſces.*
♎	♏	♐	♑	♒	♓

the *Neap Tides* at that time the loweſt, which proceeds from the greater agitation of the waters; for at this time the Moon, at its *new* and *full*, as likewiſe the Sun, are both in the Equator, which is the largeſt circle, and in the middle of the Earth. Thus when this fluid ſpheroid (or *Tide*) revolves round the greateſt circle of the Earth, it muſt be more agitated than when it turns about in a leſſer circle; it being plain, that if the Moon was conſtituted in the Pole, and there ſtood, that the Spheroid would have a fixt poſition, and that it would be always *high water* under the Poles, and *low water* every where under the Equator; and therefore, the nearer the Moon approaches the Poles, the leſs is the agitation of the Ocean, which is of all the greateſt, when the Moon is in the Equator, or fartheſt diſtant from the Poles. Whence the Sun and Moon being either in conjunction or oppoſition in the Equator, produce the greateſt *Spring Tides*; and the ſubſequent *Neap Tides*, being produced by the *Tropical Moon* in the quarters, are always the *leaſt Tides*; whereas in *June* and *December*, the *Spring Tides* are made by the *Tropical* * *Sun* and *Moon*, and there-

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* Tropical Sun and Moon is when either of thoſe Luminaries are in the ſigns of *Cancer* or *Capricorn*.

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therefore leſs vigorous, and the *Neap Tides* by the *Equinoctial Moon*, and therefore the ſtronger. Hence it happens that the difference between the *Spring* and *Neap Tides* in theſe months is much leſs conſiderable than in *March* and *September*, and the reaſon why the higheſt *Spring Tides* are found to be rather before the *Vernal*, and after the *Autumnal* Equinox, viz. in *February* and *October*, than preciſely upon them is, becauſe the *Sun* is nearer the Earth in the winter months, and by that means has a greater effect in producing the *Tides*. I think it neceſſary here to add, the judicious and ſenſible opinion of Doctor *Gregory*, relative to this curious phænomena of the *Tides*. The Doctor in his Aſtronomy ſays as follows:

Mr. *Kepler* was the firſt (that I know of) who diſcovered the true cauſe of the Tides; and he explains it largely in his introduction to the Phyſics of the Heavens, given in his Commentaries on the motion of the Planet *Mars*; where, after he has ſhewn the gravity or gravitation of all bodies towards one another, he thus writes: The orb of

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The Sun always enters *Cancer* the 21ſt of *June*, and *Capricorn* the 21ſt of *December*, which is the Sun's greateſt northern and ſouthern declination, being in both theſe ſigns at its greateſt diſtance from the Equator, conſequently its action upon the *Tides* leſs powerful.

the attracting power which is in the Moon, is extended as far as the Earth, and draws the waters under the Torrid Zone, acting upon places where it is vertical, inſenſible on included Seas or Bays, but ſenſibly on the Ocean, whoſe beds are large, and the waters have the liberty of reciprocation; that is, of riſing and falling: and in the 70th page of his Lunar Aſtronomy, but the cauſe of the Tides of the Sea appears to be the bodies of the Sun and Moon drawing the waters off the ſea. Afterwards that incomparable Philoſopher Sir *Iſaac Newton*, improved the hint, and wrote ſo amply upon this ſubject, as to make the Theory of the Tides his own, by ſhewing that the waters of the Sea riſe under the Moon, and the place oppoſite to it; for *Kepler* believed that the Impetus, occaſioned by the preſence of the Moon, does by the abſence of the Moon occaſion another Impetus; till the Moon returning, ſtops, and moderates the force of that Impetus, and carries it round with its motion: Therefore the ſpheroidical figure which ſtands out above the Sphere (like two mountains, the one under the Moon, and the other in the place oppoſite to it) together with the Moon (which it follows) being carried round by the diurnal motion (or rather according to the truth of the matter, as the Earth turns towards the Eaſt, it leaves thoſe eminences of water which being carried by their own motion, ſlowly towards the Eaſt, are, as it were, at reſt) in its journey makes the water ſwell twice, and ſink twice in the ſpace of 25 hours; in which time the Moon, being gone from the Meridian of any place, returns to it again. But becauſe the terreſtrial Fluid riſes alſo in the places where the Sun is in the Zenith or Nadir, though leſs than when the Moon is in thoſe places: In the conjunction and oppoſition of the Luminaries, the ſaid eminences of water will alſo be joined, and the greateſt elevation will happen, when both the Luminaries are (at the conjunction) in, or near the Zenith, or (at the oppoſition) the one in the Zenith, and the other in the Nadir; alſo the greateſt depreſſion will happen when the Luminaries are both in the Horizon, becauſe the water is then raiſed by both the forces, and now depreſſed by them. In the Quadratures of the Luminaries, the Sun raiſes the water where the Moon depreſſes it; and from the difference of the forces, ariſes the leaſt elevation of the water, and alſo the leaſt depreſſion. Between the * Syzygies

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* The Syzygies mean the *new* and *full Moon*, or conjunction and oppoſition.

and † Quadratures of the Luminaries, the effects appear to be intermediate, as the cauſes require they ſhould.

If the Moon be in the Equinoctial circle, the two oppoſite eminences of water will be in the terreſtrial Equator, and each of them deſcribing with its motion that Circle of the Earth will be more agitated, and therefore will be raiſed up higher againſt the ſhore, when it reaches it; beſides, that ſince the Earth's diameter is greater than any other right Line, drawn through the centre of the Earth, and terminated on either ſide by its ſurface, the water will, by the forces of the * Luminaries, be raiſed (*cæteris paribus*) to a greater heighth in that Circle than any where elſe; and therefore when the two Luminaries are in conjunction or oppoſition in the Equator, they join their forces to raiſe the water in the terreſtrial Equator, which happens in the Syzygies near the Equinox; that is, ſuch as happen on the months of *March* and *September*; the Tides then produced, will be the greateſt and the moſt agitated; and the Tides, which in the ſaid months happen in the Quadratures, will be the leaſt of all, and the leaſt agitated, as being the effects of the difference of the forces of the Moon in its greateſt declination from the Equator; namely, when the Moon is in Quadrature to the Sun in the Equator, and therefore in the Solſtitial points of the Zodiac, and conſequently produces the *loweſt* and *leaſt* agitated Tide, and this being the occaſion that the Sun, which has no declination, produces its greateſt and moſt agitated Tides; the contrary of which happens about * the Solſtices, when the leaſt Tides happen whilſt the Luminaries are in the Syzygies, (I mean the leaſt of thoſe that do happen in the Syzygies) and the greateſt (taken in the ſame ſenſe) in the Quadratures.

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* Quadratures of the Moon are the middle points of her orbit between *new* and *full Moon*, which is her firſt and laſt quarter.

† Luminaries mean the Sun and Moon.

Again, the Tides (*cæteris paribus*) are greateſt when the Luminaries are in their *Perigæum* †, and leaſt when in their *Apogæum* ‡; and as that happens to the Moon at the time of every lunation, but to the Sun only in Winter; this, joined with the former cauſes, occaſions the greateſt Tides to happen in the Syzygies, and the leaſt in the next Quadratures before the vernal, and after the autumnal Æquinox.

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* The Solſtices when the Sun enters *Cancer*, the 21ſt of *June*; and when ſhe enters *Capricorn* the 21ſt of *December*; making the longeſt and ſhorteſt days.

† *Perigæum* means when the Sun, Moon, or any Planet, is *neareſt* the centre of the Earth.

‡ *Apogæum* means when Sun, Moon, or any Planet, is *fartheſt* from the centre of the Earth.

SECT. XXIII.

Of the Magnet.

THE ſurprizing properties of the *Loadſtone*, or *Magnet*, and its great utility, highly merits our attention. The Loadſtone is a foſſil, approaching to the nature of iron oar, and endowed with the property of attracting iron. The name of Magnetic took its riſe from *Magneſia*, a city of *Aſia*, where its attractive quality was firſt taken notice of. The *Loadſtone* hath, beſides its power of attracting iron and ſteel, a certain *polarity*, or power of turning itſelf in ſuch a manner, that one point in its ſurface ſhall ſtand towards the *North*, and the oppoſite point to the South Pole of the Earth; for which reaſon theſe points are called the *North* and *South Poles of the Loadſtone*. This may be ſeen by incloſing a Loadſtone in cork, till it will ſwim, and putting it into water, where, if right balanced, it will turn its Poles towards the reſpective Poles of the Earth (nearly though not exactly). A Loadſtone, properly ſuſpended by a thread will alſo turn in the ſame manner. This *polarity*, or *verticity*, is communicated to iron, or ſteel, by rubbing them upon the Loadſtone, ſo that if a needle, or ſtrait piece of wire, properly touched with a Loadſtone, be thruſt through a round piece of cork, and thrown into water, it will as it ſwims turn it ends *North* or *South*. A ſmall long piece of ſteel thus touched, with a little braſs ſocket in the middle of it, by means whereof it may be ſuſpended in an horizontal poſition, ſo as to turn freely about upon a ſharp pointed pin, ſet perpendicular, as the *Magnetic Needle*. If a Compaſs be drawn at the bottom of a box, and the Magnetic Needle ſuſpended over its centre, it makes the common *Compaſs box*, which ſhould be made of braſs, wood, glaſs, marble, &c. with this caution, that except the needle, there ſhould be no iron or ſteel about it, leſt it ſhould affect the verticity. Some have thought that a braſs box is not proper for accurate obſervations, leſt ſome pieces of iron ſhould chance to be mixed with the braſs in caſting.

Some of the many Properties, or Phænomena of this curious Stone, are as follows:

Firſt. In every Magnet there are two Poles, one pointing North, the other South, and if the Stone be cut, or broken into never ſo many pieces, there will be then two Poles in each piece.

Second. Theſe Poles in divers parts of the Globe are diverſely inclined towards the Earth's centre.

Third. If two magnets are ſpherical, one will turn or conform itſelf to the other, ſo as either of them would do to the Earth; and that after they have thus conformed, or turned themſelves, they endeavour to approach or join each other; but if placed in a contra poſition, they avoid each other.

Fourth. If a Magnet be cut through the axis, the parts or ſegments of the ſtone, which before were joined, will now avoid and fly each other.

Fifth. If the Magnet be cut by a ſection, perpendicular to its axis, the two points which before were joined, will become contrary Poles, one in one, the other in the other ſegment.

Sixth. Steel receives virtue from the Magnet better than iron.

Seventh. That neither Loadſtone, nor Needle touched by it, do conform their Poles exactly to thoſe of the world, but have uſually ſome variation; is different in divers places, and at divers times in the ſame place. This is called the Variation of the Needle.

Eighth. That in our North parts of the world, the South Pole of a Loadſtone will raiſe up more iron than the North Pole.

Ninth. Mr. *Boyle* found, that by heating a Magnet red hot, it could be ſpeedily deprived of its *attractive quality*.

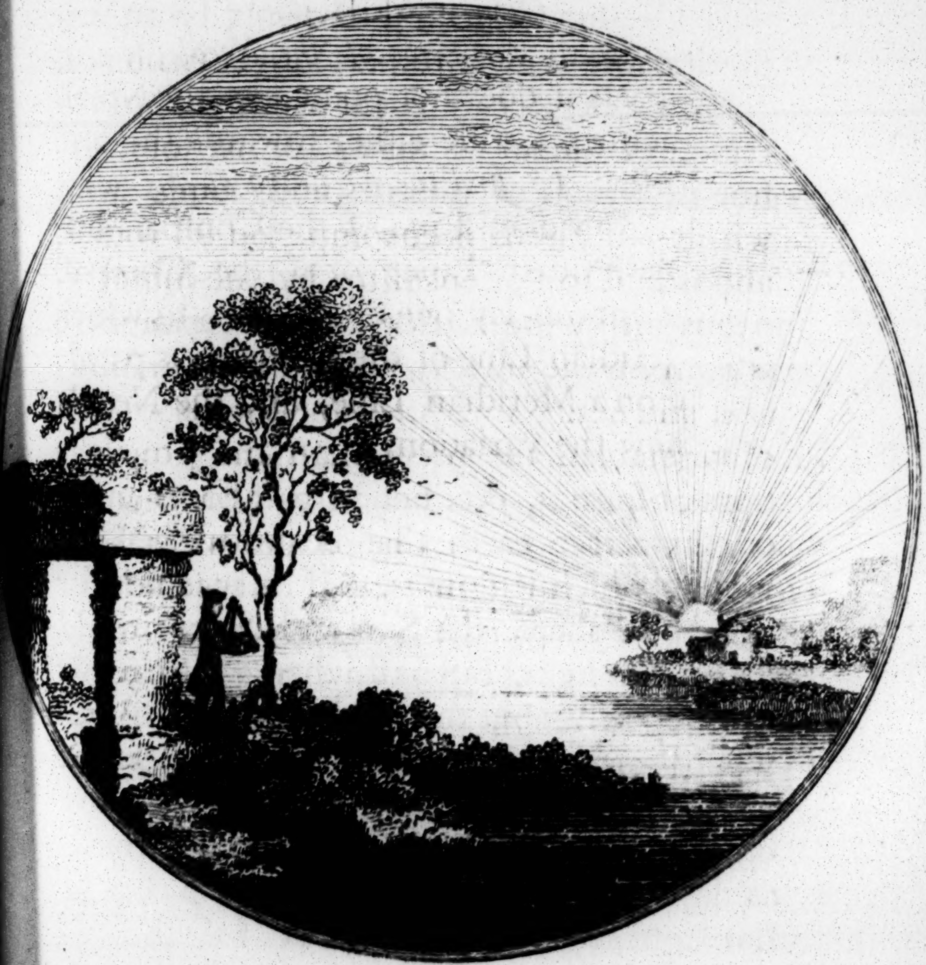
Tenth. If a Loadſtone be heated red hot, and then cooled either with its South Pole to the North in a horizontal poſition, or with its South Pole downwards in a perpendicular one, it will change its polarity, the South Pole becoming the Northern one, and *vice verſa*.

Eleventh. The iron bars of windows, which have long ſtood in an erect poſition, do grow permanently magnetical, the lower ends of ſuch bars being the North Poles, and the upper the Southern. For according to the laws of *Magnetiſm*, we find the lower ends of ſuch bars will drive away the North end of a poiſed Needle, and will attract the Southern; which ſhews, that by the continual paſſage of the ſubtle magnetical particle through them, they are turned into a kind of Magnet themſelves.

Twelfth. It has been found by drawing the back of a knife, or long piece of ſteel wire, &c. over the Pole of a Loadſtone

ſtone leiſurely, once or divers times, beginning the motion from the Equator, or middle of the ſtone, towards the Pole, the knife or wire will accordingly attract one end of a poiſed magnetical Needle; but if you take another knife or wire, and thruſt it leiſurely over the Pole, from the Pole towards the Equator, or middle of the Equator, this knife ſhall expel, or drive away, the ſame end of the Needle, whereby the former knife would attract, which experiment makes it very probable, that the operation of the Magnet depends upon the flux of ſome fine particles, which go out at one Pole, then round about, and in again at the other.

Theſe are ſome few of the many very curious properties of the Loadſtone, on which Mr. *Boyle* has treated more fully: But its moſt important uſe is in Navigation, and is called the Compaſs. To *ſet the Compaſs box*, ſo that the points of the Compaſs ſhall ſtand towards the reſpective points of the horizon of the place where we are, ſet the box upon a table, or any level place, with this caution, that no iron or ſteel be near it; then turn the box gently about, till the Needle, after vibrating to equal diſtances on each ſide the Meridian Line of the Compaſs, reſts exactly over it; that line then points North or South, unleſs it be in ſome parts of the world, where there is always a ſmall *variation of the Needle*, i. e. in thoſe parts it does not point exactly North, but inclines a trifle either towards the Eaſt or Weſt. *To find the variation at any place*, ſet the Meridian Line of the Compaſs box over a Meridian Line; or if the Compaſs box be ſquare, lay one of the ſides to which the Meridian Line of the Compaſs is parallel, upon a Meridian Line, and the Needle will ſhew the variation.



S E C T. XXIV.

Of the Atmoſphere.

THE *Atmoſphere* having a conſiderable affinity, and being eminently connected with that terreſtrial Globe we have been deſcribing, and being intended as a matter of important deſign by our infinitel wiſe Creator, it would therefore be an unpardonable neglect to paſs it over in ſilence.

The *Atmoſphere* * is the lower part of the region of the air or æther, or as ſome define it, a maſs of vapours and clouds, with which our Earth is encompaſſed all round, and is ſaid to be forced up by the ſubterraneous air in the Earth. This Atmoſphere is not only admirably fitted for the reſpiration and nouriſhment of animals, the growth of vegetables, the production and propagation of ſounds, &c. but helps alſo to make our habitable earth that beautiful ſcene of variety which it now is. If it was not for the Atmoſphere, the Sun and Stars would give us no light, but juſt when we turn our eyes upon them, the brightneſs of the Sun would indeed be greater than it is, but if we turned our eyes from him towards any other part of the heavens, it would appear as dark and as full of Stars as in a bright ſtar light night in winter. As for the various bodies which are upon the Earth, they would all, without the Atmoſphere, appear to us as dark as at midnight, except only thoſe parts of them which happened to be in ſuch a poſition, that the rays of the Sun falling upon them were reflected to our eyes. It is eaſy to imagine how much of the beauty of the viſible creation would be loſt in theſe circumſtances, beſides the inſupportable prejudice to the eyes of all creatures, by paſſing ſo ſuddenly from pitchy darkneſs to exceſſive light. The numberleſs ſmall particles of various kinds, which float in the air, receive the light from the Sun, and like ſo many ſmall ſpecula or looking-glaſſes, reflect and ſcatter it through the air *, and this occaſions that light which we ſee in the day time, by which our eyes are affected ſo ſtrongly, as to render the fainter light of the Stars inſenſible. By this means the ſky is illuminated all around us by the Sun, not only whilſt he is above † our horizon, but alſo for ſome time before his riſing, and after his ſetting, ſo long as any of his rays can either directly, or by refraction, reach any part of the Atmoſphere

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* Our Earth is ſurrounded every way with a ſphere of air, wherein various kinds of particles are continually floating, the whole taken together is called the Atmoſphere, from its ſpherical ſhape, and from the *Greek* word ατμος, which ſignifies a miſt, vapour, or ſmoke.

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* Thus if the Sun ſhines into a dark room, thro' an hole in a door or ſhutter of a window, we perceive it in a long ſtream of light, which appears brighter the fuller the room is of duſt or ſmoke.

† The Atmoſphere is computed to reach about forty-five miles above the ſurface of the Earth, and at the height of about ſeven miles from the Earth the air is four times nearer than at the ſurface, and at the height of fourteen miles it is ſixteen times nearer than at the ſurface, and ſo on in mathematical proportion.

phere within our viſible horizon; for the air, as well as all other mediums which tranſmit light, refracts or bends the rays of it, if they come into it from a different medium. This property of the air is exceedingly beneficial to the inhabitants of the Earth, as it lengthens the days by the addition of the twilight, but it gives Aſtronomers ſome trouble, as it changes a little the places of all the heavenly bodies, and makes them appear higher than they really are, and muſt therefore be taken into the account, if we would be exact. The Ancients were not well acquainted with the refraction of the air, which renders many of their obſervations of the heavenly bodies, eſpecially near the horizon, liable to uncertainty.

Dr. *Keil*, in his Introduction to Aſtronomy, page 233, ſpeaking of the Atmoſphere, ſays, "If there were no *Atmoſphere*, the Sun, immediately before his ſetting, would ſhine as briſkly as at noon; but in a moment, as ſoon as he is ſet, ſhe ſhould have the face of the earth in as great darkneſs as it would be at midnight. So quick a change, and ſo ſudden a paſſing from the greateſt light to the greateſt darkneſs, would be very inconvenient to the inhabitants of the Earth; but by means of the *Atmoſphere*, it happens that though after Sun-ſetting we receive no direct light from the Sun, yet we enjoy its reflected light for ſome time, ſo that the darkneſs of the night comes not ſuddenly, but by degrees: For after the Earth, by its revolution round its axis, has withdrawn us from the ſight of the Sun, the *Atmoſphere*, which is higher than we are, will ſtill be illuminated by the Sun, ſo that for a while the whole heavens will have ſome of his light imparted to it. But as the Sun goes ſtill lower under the Horizon, the leſs is the air illuminated by him; ſo that when he is got as far as eighteen degrees lower than the Horizon, he no longer enlightens our *Atmoſphere*, and then all that part thereof that is over us becomes dark. So likewiſe in the morning, as ſoon as the Sun comes within eighteen degrees of the Horizon, he begins again to enlighten the *Atmoſphere*, and to diffuſe his light through the heavens; ſo that its brightneſs does ſtill increaſe till the Sun riſes, and makes full day. This illumination of the *Atmoſphere*, and ſtate of the heavens between day and night, is what we call the twilight, which is obſerved in the morning before Sun-riſing, and at night after his ſetting. In *Latin* it is named *Crepuſentum*."

SECT. XXV.

Of Mountains.

MOuntains are ſo conſiderable parts of the earth, as to demand ſome notice here ſhould be taken of them. To the eye they may appear rough and diſagreeable, but whoſoever will reflect on their internal ſtructure, muſt own it is a piece of work deſigned by art, no leſs than the animal body; for the internal parts muſt be firm, yet open, that they may admit into their cavities the rains and water falling from the ſky*: Nor muſt the *celeſtial ſtore* ſtagnate there, but perform a various and mazy courſe, till it breaks out again into the open air, at the ſides and roots of the hills, whence it flows in meandring ſtreams, to enliven the parched ſoil, and chear the thirſty tribes of animals. Many of them are alſo internally furniſhed with mines of rich metals; others are remarkable for the dreadful eruptions of fire, ſmoke, ſtones, and aſhes, as *Mount Etna* and *Veſuvius*, which ſeems intended by the Almighty Architect as vents to iſſue out the ſubterraneous heat of the Earth, and thereby prevent frequent earthquakes. The heighth and bigneſs of mountains in general, anſwer to the ſpacious plains they are intended to water below. To meaſure the height of a mountain is moſt readily performed by a *Mercurial Barometer*, it being univerſally agreed on, that the quickſilver is ſuſtained in the tube of the Barometer, by the preſſure of the air upon that quickſilver, wherein the lower end of the tube is immerſed; that the farther from the centre of the earth the Barometer is placed, the ſhorter is the column of air, and the leſs its weight; by the preſſure whereof the quickſilver is ſupported in the tube, and conſequently the lower will it ſubſide. Thus, whatever is the height of the quickſilver in the tube at the bottom of a well, it will ſtand lower when the Barometer is brought up to the ſurface of the Earth, and will ſubſide ſtill lower, if it be carried up to the top of an high tower; and this ſubſiding of the quickſilver is in a certain proportion to the height of the place where the experiment is made. Thus Doctor *Schenchzer* took the heights of ſeveral of the Alps, from the detail of his obſervations; which may be ſeen in the *Philoſophical Tranſactions* for the year 1728, No. 405 and 406. It appears that the higheſt of the Alps, the tops whereof are covered with everlaſting ſnow, do not riſe above 10000 *Paris* feet, which is 10680 *Engliſh* feet, or two *Engliſh* miles, 120 feet above the level of the ſea; and theſe Mountains, which are undoubtedly the higheſt in *Europe*, that Gentleman is of opinion may equal the height of any upon the Globe.

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* There are ſeveral mountains ſo high as to penetrate the clouds, by which they collect a moiſture, that is increaſed as the winds bring more clouds to them. All this moiſture being collected together in one channel, falls in winding currents down the declivity, to refreſh the Inhabitants. Thus Mountains ſerve to attract the water from the clouds.

SECT. XXVI.

Of the Depth of the Sea.

THE depth of the ſea has been thought by ſome to anſwer the height of Mountains, as if the Earth had been once a perfect globe, and the Mountains conſiſted of what was taken out of the cavities made for the reception of the waters; but this is mere conjecture, without any ſolid foundation. The depth of the ſea is in many places unknown, being unfathomable by the line, though great lengths have been made uſe of for that purpoſe. Mr. *Boyle*, in his Treatiſe of Subterranean and Submarine Regions, mentions a curious Traveller, who, upon enquiring whether he had taken notice of any extraordinary deep ſoundings in the vaſter ſeas, anſwered, that on the other ſide of the Line, about the Latitude of 35° they let down 400 fathom of line, and that the lead, which weighed about 30 or 35 pounds, by going ſo deep, appeared, when drawn up again, intenſely cold, like ice. There are in the ſame Treatiſe, ſeveral proofs that the ſea-water is colder the deeper we go. *Varenius* tells us, the depth of the ſea has, in ſome places, been found a *German* mile, which is equal to four *Engliſh* miles. *Ricciolus* writes of ſome *Engliſhmen* having ſounded with lines to the depth of 3000 ells. but he ſpeaks of it by hear-ſay. *Plaus Magnus* ſpeaks of ſome parts of the Northern Seas being ſo deep, that a ſhip-load of line would not ſuffice to ſound them to the bottom; but this I ſuppoſe is ſaid at random. *Cæſar* is ſaid to have found the depths of ſome parts of the *Mediterranean*, and the *Adriatic*, not to exceed fifteen ſtadia, which is almoſt two *Engliſh* miles: It is probable, that from this relation that *Pliny* ſays, the depth of the ſea is in ſome places fifteen ſtadia. In the *Philoſophical Tranſactions* for the year 1728, No. 405, we have a deſcription of a Machine to meaſure the greateſt depths of the ſea; but if any experiments have been made therewith, they are not yet communicated to the public.

The proportion of the ſurface of the earth to that of the ſea, ſo far as diſcoveries have been made, may be found by taking the paper of a Terreſtrial Globe, and ſeparating the land from the ſea with a pair of ſciſſars, and comparing the reſpective weights of each. This experiment ſuppoſes the delineation of the Globe to be correct; the paper whereon it is printed ſhould be alſo of an equal thickneſs as near as poſſible, weighing thus the papers of Mr. *Senex*'s Globes of ſixteen inches diameter, the weight of the paper whereon the ſea was repreſented was 349 grains, that of the land 124, ſo the ſurface of the ſea* is almoſt three times as great as that of the land hitherto diſcovered.

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* This is pretty evident, from a bare inſpection of the *circular Maps*; for at one view we ſhall obſerve the great *South Sea, Pacific Ocean, Atlantic, &c.* to contain more ſpace than all the land.

A TABLE of the *Latitudes* and *Longitudes* of ſome of the moſt eminent Places of the Earth; together with their Differences of Meridian in Time, accounted from the Meridian of the Royal Obſervatory at *Greenwich*.

Places Names.	Latitude.		Longitude.		Differen. of Merid.		Bearings.
	D.	M.	D.	M.	H.	M.	
Acapulco in Mexico	17	30	106	15	7	5	W
Agra, Mogul's Court	28	30	83	15	5	33	E
Aleppo in Syria	37	20	36	15	2	52	E
Alexandria, Egypt	31	7	33	00	2	12	E
Amſterdam	52	21	4	45	0	19	E
Antwerp	51	10	4	15	0	17	E
Babylon	34	30	48	30	3	14	E
Barbadoes	13	30	58	15	3	53	W
Barcelona	41	26	2	30	0	10	E
Batavia	6 S	15	100	45	6	43	E
Bengal	21	56	95	15	6	21	E
Bergen in Norway	61	00	8	00	0	32	E
Bononia in Italy	44	30	11	45	0	47	E
Boſton, New England	42	25	70	37	4	42½	W
Breſt in France	48	23	4	30	0	18	W
Cadiz in Spain	36	16	7	30	0	30	W
Calais in France	50	57	1	45	0	7	E
Canea in Crete	35	29	24	7	1	36½	E
Candia	35	18	25	15	1	41	E
Cape Verde, or Goree	14	43	17	51	1	9	W
Cheuſan, China	30	00	121	30	8	6	E
Cochin, Eaſt Indies	9	25	75	45	5	3	E
Conimbra, Portugal	40	30	9	45	0	39	W
Conſtantinople	41	7	31	45	2	7	E
Copenhagen	55	40	12	30	0	50	E
Cracow, Poland	50	10	19	30	1	18	E
Cuſco in Peru	12 S	25	73	43	4	55	W
Dantzick in Poland	54	22	19	00	1	16	E

Places Names.	Latitude.		Longitude		Difference of Meridian		
	D.	M.	D.	M.	H.	M	
Diepe in Normandy	49	56	1	00	0	4	E
Dublin in Ireland	53	12	7	00	0	28	W
Dunkirk, Flanders	51	1	2	15	0	9	E
Edinburgh, Scotland	55	57	3	00	0	12	W
Frankfort, Main	50	4	8	45	0	33	E
Geneva	46	22	6	30	0	26	E
Genoa	44	27	9	45	0	39	E
Ghent	51	1	3	45	0	15	E
Greenwich Obſerv.	51	28½	0	00	0	00	E
Goa in India	15	30	73	45	4	55	E
Goes in Zealand	51	30	4	00	0	16	E
Hamburgh	53	41	10	30	0	42	E
Jamaica	17	40	76	00	5	4	E
Leghorn	43	18	12	45	0	51	E
Lima, Peru	12 S	20	81	00	5	24	W
Lintz, Auſtria	48	16	15	00	1	00	E
Liſbon, Portugal	38	50	10	30	0	42	W
LONDON	51	32	0	05	0	0½	E
Madagaſcar	19 S	29	44	00	2	58	W
Madrid	40	10	3	15	0	13	W
Martinico Iſland	14	44	61	00	4	4	W
Marſeilles	43	20	5	22	0	21½	E
Meſſina	38	21	16	30	1	6	E
Mexico	20	6	102	10	6	49	W
Montpellier	43	36	3	45	0	15	E
Moſcow	55	34	38	45	2	35	E
Nangazack, Japan	32	53	127	45	8	31	E
Nancy, Lorrain	48	39	6	45	0	27	E
Naples	41	5	15	45	1	3	E
Nice, Provence	43	38	7	15	0	29	E
Oxford	51	44½	1	15	9	5	W
Padua	45	31	11	15	0	45	E
Paris	48	50	2	15	0	9	E
Pekin, China	39	55	177	45	7	51	E

Places Names.	Latitude.		Longitude		Differenc of Merid.		Bearings.
	D.	M.	D.	M.	H.	M.	
Pondicherry	11	54	8	15	5	21	E
Prague Bohemia	50	40	14	30	0	58	E
Ratiſbon	48	59	12	15	0	49	E
Rhodes	36	42	33	00	2	12	W
Rochelle	46	10	1	20	0	5½	E
Rome	41	51	13	00	0	52	E
Rotterdam	51	55	4	15	0	17	W
Seville	37	36	6	30	0	26	E
Siam, in India	14	18	100	45	6	43	E
Iſpahan, Perſia	36	14	65	00	4	20	E
Stockholm	58	50	17	30	1	10	E
Syracuſa, Sicily	37	4	15	15	1	1	W
Toulon, France	43	6	5	45	0	23	E
Tripoly in Barbary	32	54	13	00	0	52	E
Valentia, Spain	39	30	00	45	0	3	E
Venice	45	18	12	30	0	50	E
Vienna	48	22	17	15	1	9	E
Wirtemberg	51	33	13	80	0	52	E
York	54	00	1	00	0	4	W

CONCLUSION.

AFTER what has been ſaid, whoever duly turns his attention to the things on this our *Terraqueous Globe*, muſt neceſſarily confeſs, that they are ſo connected, ſo chained together, that they all aim at the ſame end; and to this end a vaſt number of intermediate ends are ſubſervient. All things contained in the compaſs of the Univerſe declare, as it were with one accord, the infinite wiſdom of *the Creator.*—Hence that enchanting beauty which yields ſo much pleaſure, whether we behold the vaſt machine at one view, or at greater leiſure ſurvey its different parts. How delightful is the proſpect of the Earth, diverſified with Hills, Vallies, Woods, Rivers, Lakes, and Seas! The verdure and freſhneſs of the Spring, the rich fruits of Autumn, and that plenty of variegated flowers which gaily bloſſom in Summer, greatly heighten our pleaſure. Not only the fertile fields and meadows, which are watered with brooks and rills; not only the woods, and richer plains, with the graſſy paſtures of the mountains, and all the more finiſhed ſcenes, give pleaſure to the eye, and ſtrike us with a ſenſe of beauty; but even the rougher and leſs finiſhed parts of Nature. With a pleaſing aſtoniſhment we behold the barren heath, the wildneſs of the deſart, the unſhapen rocks, and impending precipices. The rigours of Winter have their peculiar graces, and furniſh us with proſpects which become agreeable in their ſeaſon. Beſides, what plenty is there of the liquid Element widely diſperſed throughout the Earth. Waters riſe up in ſweet ſprings and fountains, or in minerals of a more poignant taſte, according to the different kinds of earth, ſtones, or metals, with which they are impregnated in their ſubterraneous paſſages. Sometimes collected into larger quantities, they flow down gently in purling rills. Sometimes they roll along with impetuous currents to the Seas, from whoſe ſurface being continually raiſed in vapours by the influence of the *Sun*, they float in the Atmoſphere, and are rarefied or condenſed according to its temperature. Being rarefied, they mount up into the higher regions, till becoming of the ſame gravity with the circumambient air, they are ſuſpended for a time; or if condenſed, fall down in dews, rains, ſnows, hails, and froſts, and with their enriching moiſture convey prolific ſeeds to all parts of the Earth. By the conſtant viciſſitudes of the Tides, when the waters riſe or fall, according to the motions of the Moon, all ſtagnation of the Ocean is prevented, and the foulneſs and corruption of its waters are purged. And to preſerve the element of air pure and healthful, gentle gales and breezes, nay the fierceſt winds, become the obedient miniſters of the *Almighty.*

Again, we are to remember the Earth is of a prodigious bulk, placed at a proper diſtauce diſtance from the Sun. If it had been ſituated much nearer, it had been too much ſcorched; if at a greater diſtance, it had been frozen with cold, and had become unfit for the ſupport of vegetation, and animal life. By its diurnal rotation, and by the inclination of its axis to the plane of the Ecliptic, all its parts in common are gradually illuminated, and warmed in a manner moſt beneficial for the whole. The clouds and air, with which it is ſurrounded, ſerve, by an admirable mechaniſm, to preſerve and cheriſh animal and vegetable life. The Earth contains in its bowels a great variety of rich materials, which may be applied to excellent uſes, as the art of Man had evidently proved.

The celebrated Dr. *Keil* has clearly proved, that the inequalities on the ſurface of the Earth, ariſing from the vaſt ranges of the mountains; that the largeneſs of the ſurface of the Seas; that the obliquity of the axis of the Earth to the plane of the Ecliptic, are mighty advantages to mankind; that the large ſurface of the Sea, and the huge tracts of the Mountains, are neceſſary for forming the rivers, and producing a ſufficient quantity of rain; and that if the axis of the Earth were perpendicular to the plane of the Ecliptic, we could not have thoſe proper degrees of heat and cold, which are neceſſary to raiſe up vegetables, and to bring them to perfection; and particularly, that all thoſe tracts of the Earth which lie within 45 degrees of Latitude, would have more heat than they have at preſent, which would be hurtful, inſtead of being an advantage; while all the tracts beyond 45 degrees of Latitude, would have been deprived of ſeveral degrees of heat, which they enjoy at preſent. Above all, the infinite wiſdom, goodneſs, and energy of the *great Creator* appear conſpicuous, in continually raiſing up, preſerving, and ſupporting, from the beginning of the world, to this day, ſuch immenſe numbers of animals and rational creatures, whoſe natures he has exalted far above the moſt glorious bodies, which are inſenſible of life or being. Animated with different degrees of ſenſe, or endued with the more excellent and exalted faculty of reaſon, they enjoy various degrees of happineſs. Their neceſſities and wants, their appetites and deſires, are infinite; but there is abundance of proviſion to ſatisfy and ſupply them"—"*The Earth is full of the riches of the Lord.*"

Thus are we taught not to look upon the ſublime reflections which Geography, aided by Natural Philoſophy, leads us to make concerning the Author of the *Univerſe*, as mere curioſities; for this ſtupendous work, which appears always more wonderful the more we know it, gives us ſuch exalted notions of its Maker, that they fill our minds with admiration and reſpect. But above all, if we extend our reſearches to *Aſtronomy*, it will lay before us one grand attribute of our *Creator*, viz. his immenſity, by the diſtance, magnitude, and number of celeſtial Bodies. How grand is that proſpect which is ſet before us during the ſolemn ſilence and ſhade of night! The Luminaries of Heaven ſhine forth with majeſtic pomp, and form a glorious ſpectacle to the eye. To the contemplative mind they appear ſtill more wonderful, and afford a delightful ſubject of ſpeculation.

The vulgar look upon the Stars as nothing more than a multitude of bright ſpangles, dropped over the ætherial blue. They have no higher notions of theſe fine appearances, than that they are ſo many golden ſtuds with which the empyrean arch is decorated. But ſtudious minds, that carry a more accurate and ſtrict enquiry among the Celeſtial Bodies, bring back advice of a moſt aſtoniſhing import.—Let us recollect the moſt ſtupendous diſcoveries, and let the unlearned remember, that the ſcene we are going to diſplay, is the workmanſhip of that incomprehenſible Being, who is perfect in Knowledge, and mighty in Power; whoſe name, whoſe nature, and whoſe operations are great and marvellous; who ſummons into being, with equal eaſe, a ſingle grain, or ten thouſand worlds.

The Moon that walks among the brilliant army of the Skies, excelling them all, this fair regent of the night ſhews the wiſdom of that Omnipotent Ruler, who has dreſſed her in beaming but borrowed ſilver, and made the waters of the pathleſs Ocean ſubject to her power.

The *Comets,* which ſometimes dart into the illimitable parts of æther, farther than our eyes can follow them, and return from the long, long excurſion, ſweeping our affrighted Hemiſphere with their enormous fiery tails, ſhewing, in glowing characters, the handy work of the *Creator*, who, at his ſovereign pleaſure, withdraws the blazing wonder, or ſuffers the portentous ſtranger to ſhake terror over a guilty land.

Who that looks upward to the midnight Sky, and with an eye of reaſon beholds its rolling wonders, can forbear enquiring of what thoſe mighty orbs were formed? Amazing to relate! they were produced without materials.—They ſprung from emptineſs itſelf. The ſtately fabric of univerſal nature emerged out of nothing.—A bare *fiat* accompliſhed all: "*Let them be*, ſaid *God*. He added no more, and immediately the marvellous edifice aroſe, adorned with every beauty, diſplaying innumerable perfections, and declaring, amidſt admiring Seraphs, its Creator's praiſe.

The Earth, to us that dwell on its ſurface, ſeems by far the moſt extenſive Orb, that our eyes can any where behold. It is alſo cloathed with verdure, diſtinguiſhed by trees, and adorned with a variety of beautiful decorations: Whereas, to a ſpectator placed on one of the planets, it wears an uniform aſpect, looks all luminous, and no larger than a ſpot. To Beings who dwell at ſtill greater diſtances, it entirely diſappears. That which we call alternately the Morning or the Evening Star, is a planetary World, which, with four others, that ſo wonderfully vary their myſtic dance, are in themſelves dark bodies, and ſhine only by reflection; have Fields, and Seas, and Skies of their own; are furniſhed with all accommodations for animal ſubſiſtence, and are ſuppoſed to be the abodes of intellectual life. All which, together with this our earthly habitation, are dependent on that grand diſpenſer of Divine munificence the *Sun* *, receive their light from the diſtribution

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* As the *Arabs* worſhip the *Sun*, I have ſelected from *Uſong*, the following ſublime, and pathetic Prayer. His riſing is firſt mentioned in the following

tion of his rays, and derive their comforts from his benign agency.

The Sun, that ſeems to perform its daily ſtages through the Sky, is, in this reſpect, fixed and immoveable; it is the great axle of Heaven, about which the Globe we inhabit, and the other planetary Orbs, wheel their ſtated courſes: The Sun, though ſeemingly ſmaller than the Dial it illuminates, is abundantly larger than this whole Earth, on which ſo many lofty Mountains riſe, and ſuch vaſt Oceans roll. A line extending from ſide to ſide, through the centre of that reſplendent Orb, would meaſure more than eight hundred thouſand miles; a girdle formed to go round its circumference, would require a length of millions;

ing beautiful, deſcriptive manner.—Juſt as the all-glorious Sun's reſplendent diſk had peep'd above the hill, two *Arabs* were ſeen to proſtrate themſelves on the Earth with hands extended, and with voice expreſſive of the moſt energetic feelings, thus poured forth their ardent Prayer—Dread Sovereign of Nations, of Ages, and of all Worlds, thou ſendeſt again the bleſſed meſſenger of thy goodneſs to proclaim thee, the Author of new bounties to the race of man; far too reſplendent for human eyes, is the bright creative Sun. The ſource of good, the origin of all perfection; perfect emblem of its incomprehenſible Creator. Oh! that the light of the eternal Sun may irradiate on our hearts! Oh! that mankind may feel thy favours to be their only good, and make Eternity the ſcope and aim of all their actions.

and were its ſolid content to be computed, the account would even confound our underſtanding, and almoſt exceed the power of language to expreſs.

Let us attend our Philoſophic guides, and we ſhall be brought acquainted with ſpeculations incomparably more enlarged and amazing.

This ſyſtem of ours is but a very ſmall part of the Univerſe: Every Star, though in appearance but a lucid point, is really a vaſt Globe, equally ſpacious and luminous with our Sun; and like him the centre of a magnificent ſyſtem, attended with worlds which their unmeaſurable diſtance veils from our ſight.

The more attentively I view the chryſtal concave, the greater number of luminaries I diſcern. Abundance of minuter lights that lay concealed from a ſuperficial notice, are viſible on a cloſer examination; eſpecially in thoſe tracts of the Sky which are called the *Galaxy*, and are diſtinguiſhable by a ſort of *Milky Path*; there they are crouded rather than diſſeminated: The Region ſeems to be all on a blaze with their blended rays: They ſhine thick as dew drops on the face of the morning.—Beſides this vaſt profuſion which the prying eye diſcovers, were I to make my ſurvey from a part of the Globe, conſiderably nearer the *Southern Pole*, I ſhould behold a new choir of ſtarry bodies, which have never appeared in our Hemiſphere.—Of the *Pole Star*, it is obſervable, that, while other luminaries alter their ſituation, this ſeems unvariably fixed. While other luminaries now mount the battlements of Heaven, and appear upon duty, now retire beneath the Horizon, and reſign to a freſh ſet, the watches of the night, this never departs from its ſtations. This, in every ſeaſon, maintains an uniform poſition, and is always to be found in the ſame tract of the northern Sky. How often has this beamed bright intelligence on the Sailor, and conducted the ſhip to her deſired haven! In early ages, thoſe that went down to the ſea in ſhips, and occupied their buſineſs in great waters, had ſcarce any other ſure guide for their wandering veſſel. This, therefore, they viewed with the moſt ſollicitous attention: By this they formed their obſervations, and regulated their voyage. When this friendly guide was obſcured by clouds, or inveloped by miſts, the trembling Mariner was bewildered on the watery waſte. His thoughts fluctuated as much as the foaming ſurge; he neither knew how far he was advanced, nor whither to direct his courſe. But when this auſpicious Star broke thro' the gloom, it diſſipated the anxiety of his mind, and cleared up his dubious paſſage. He re-aſſumed with alacrity the management of the helm, and was able to ſhape his courſe with ſome tolerable degree of ſatisfaction and certainty, and that even in thoſe ſilent hours, when the World was locked up in quiet ſleep. Thus when night's ſable curtain is let down, and feeble nature calls for reſt, we paſs, perhaps, the hours in ſweet refreſhing ſlumbers. Take then, friendly Reader, one ſhort leſſon to your couch, forget not the hand which protects mankind on the vaſt Ocean, that divine Hand who cloſes thus your drooping lids. It is an obſervation of a great Philoſopher, that Mathematical Sciences have a tendency to purify the ſoul; the active principle within us muſt have ſome employment; if it be taken up with uſeful ſpeculations, it will be leſs attached to ſenſual pleaſures, and enable us to act more up to the dignity of a reaſonable nature: In order to this we muſt carry on our contemplations of the frame and conſtitution of the Univerſe to their proper mark, ſo as from beholding the wonders of the Creation, to be brought to adore the wiſdom, power, and goodneſs of the *Creator*; there is, indeed, no part of the Creation which does not diſplay theſe mighty attributes to an attentive mind; *tho' an unwiſe Man does not well conſider this, and* *a Fool does not underſtand it*—but the Heavens in a more eminent manner declare, *the glory of God, and the Firmament ſheweth his handy work.* In this divine book the moſt unlettered may find enough to excite their admiration, though it will diſplay the greateſt wonders to thoſe who peruſe it with the cloſeſt attention, but then we muſt take care always to approach it as we ſhould the other book of God, the holy Scriptures with reverence and humility, not having too high an opinion of our own abilities, as if we could, with the line of Human Reaſon, fathom all the depths of the Divine Councils, *but thinking ſoberly as we ought to think,* and this will form in us a proper diſpoſition to receive inſtructions worthy the great lover of mankind to deliver. Here we ſhall have no unintelligible jargon, all is plain, rational, and conciſe. The doctrine is alſo ſo agreeable to the principles of reaſon, as to admit corroborating proofs from an accurate enquiry into the laws of Nature and conſtitution of the Univerſe: Thus we behold the wonderful diſplay of the wiſdom and power of God in the Creation; the admirable ſtructure of animals, the beautiful arrangement of the vegetable world, the ample proviſion he hath made both for the ſupport and happineſs of every creature who inhabit this Globe, from the higheſt and moſt exalted being, down to the meaneſt and moſt abject Reptiles; theſe are convincing proofs that the unſeen hand who regulates and directs the great Machine, muſt be powerful beyond conception, great beyond idea, wiſe beyond the reach of human capacity to comprehend; bountiful and loving beyond all bounds of affection; to ſpeak in his own language, *his mercy is over all his Works.*

APPENDIX.

IN the courſe of this work I had frequent occaſion to mention the more Southern parts of the world; as in page 26,* 95, *&c.* where I informed the Reader, thoſe parts were at that time but little known, ſince which Dr. *Solander* Mr. *Banks*, and other ingenious Gentlemen, have favoured the world with their ſeveral late diſcoveries in the Southern Hemiſphere; it might therefore be deemed want of gratitude in me to have withheld ſuch an entertaining and intereſting improvement from my young Readers; eſpecially as it will be a means of throwing ſome important lights upon the ſubject of this treatiſe.

The Aſtronomical Obſervations and Remarks may prove both pleaſing and uſeful to the admirers of that grand Science.

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* See the Note, page 26.

NEW DISCOVERIES *made in the* SOUTH SEAS *by Commodore* BYRON, *Captain* COOK, *&c. in a Voyage towards the* SOUTH POLE.

HIS Majeſty (from a moſt noble principle) ſoon after his acceſſion to the Crown, formed a deſign of ſending out veſſels for making Diſcoveries in Countries hitherto unknown. Accordingly on the 21ſt of *June* 1764, the *Dolphin* and *Tamar* frigates ſailed from the *Downs* under the command of the honourable Commodore *Byron*. On Saturday the 21ſt of *July* they made the Iſland of *Palma*, one of the *Canaries*, ſoon after their water growing bad, they touched at one of the *Cape de Verd* Iſlands for a freſh ſupply; during the whole they obſerved no fiſh followed the ſhip, which is ſuppoſed to be owing to her being ſheathed with copper. By the 26th their water became foul and ſtunk intolerably, which was purified by a machine put on board for that purpoſe, as a kind of Ventilator, by which air was forced thro' the water in a continued ſtream, and thus the water became pure. On the 30th they came to an anchor in Port *Pragabay*. The rainy ſeaſon was then ſat in, which renders this place very unſafe; a large ſwell that rolls in from the Southward makes a frightful ſurf upon this ſhore, and there is reaſon every hour to expect a *Tornado* *, of which, as it is very violent and blows directly in, the conſequences are likely to be fatal, ſo that after the 15th of *Auguſt* no ſhipping come hither till the rainy ſeaſon is over, which happens in *November;* therefore all poſſible haſte was made to get from this place. The meat procured from theſe people was little better than carrion, and the weather was ſo exceſſive hot, that fleſh ſtunk in a few hours after it was killed. The intolerable heat and almoſt inceſſant rains in thoſe parts much affected their healths; the men began to fall down in fevers. It is obſervable, that although ſhips in thoſe hot Latitudes generally catch plenty of fiſh, yet their copper bottom prevented their taking any, except a few ſharks. In Latitude 38 degrees and 53 minutes South, Longitude 51 degrees Weſt, a great number of birds appeared about the ſhip; many of them very large, ſome were brown and white, others black, with great quantities of rock-weed and ſeals. In the paſſage from *Rio*

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* Tornado ſignifies a ſudden and vehement guſt of wind from all points of the compaſs, frequent on the coaſt of *Guinea, &c.*

de Janeiro to *Port Deſire*, they ſhot ſome very large hares, which abound in this country, and weigh more than 26 lb. they alſo ſhot ſome fawns, which having left in the field till next day, found the fleſh of them intirely devoured by the tygers, who had even cracked all the bones to get at the marrow. In Latitude 48 degrees South, and Longitude 66 degrees Weſt, were ſeen many large Whales*, continually ſwiming by the ſhip. In Latitude 51 degrees and 8 minutes South, Longitude 71 degrees and 4 minutes Weſt, they diſcovered *Cape Virgin Mary*: the North entrance of the ſtreight of *Magellan*, bore South Weſt 19 degrees 50 minutes here they met with a kind of *Gigantic Indians*, who ſeemed to realize the name of monſters in human ſhape; their only covering is the ſkins of wild beaſts, and are made more hideous by daubing themſelves with a coarſe kind of paint. In Latitude 53 degrees 10 minutes South, is *Sandy Point*; the herbage is moſt luxuriant and beautiful, and the air perfumed with fragrance.——In fact all theſe parts up to *Falkland Sound* ſeems fruitful and pleaſant, but muſt from the Sun's diſtance be very cold in the Winter, as in Latitude 53 degrees 10 minutes South, their Winter is our Summer, and in June the Sun is nearer us almoſt 3000 miles than them, conſequently they muſt be cold at that ſeaſon; about Latitude 51 degrees South, Longitude 63 degrees 22 minutes Weſt, they diſcovered an Iſland, which they called *Port Egmont*, at this place was abundance of wild cellery and wood ſorrel, very uſeful for thoſe who had contracted ſcorbutic diſorders by long voyages; here was alſo a very formidable amphibious animal of an enormous ſize, called the *Sea Lion*, with other fierce animals, which often attacked the crew; this ſeems to be a very conſiderable track of land. A little diſtance from the ſtreight of *Magellan*, near *Cape Upright*, an Officer ſearching for harbours fell in with a few Indians, who gave him a dog; one of the women offered him a child, which was ſucking at her breaſt; it is ſcarcely neceſſary to ſay that he refuſed it, but the offer ſeems to degrade theſe poor forlorn Savages more than any thing in their appearance or manner of life; it muſt be a ſtrange depravity of nature that leaves them deſtitute of affection for their offſpring, or a moſt deplorable ſituation that impreſſes neceſſities upon them, by which it is ſurmounted. We are next informed of the diſcovery of a few naked Indians in canoes; one of which came on board, and ſeemed as much delighted as ſurpriſed at all he beheld; he was all motion and life*, dancing and jumping about the ſhip, and endeavouring

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* The Whales ſeen in thoſe parts muſt have come from high South Latitude, which indicates what Nature tells us, that it muſt be equally cold at the South as at the North Pole.

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* There are ſeveral diverting Anecdotes in the courſe of this work, relative to the Oddities and Manœuvres of thoſe untutored people. The Captain tells us, an Indian being one day on board was earneſtly viewing the rigging of a ſhip with a kind of aſtoniſhment; in the midſt of his reverie a domeſtic goat belonging to the ſhip came ſuddenly behind, and butted him with ſome degree of force; the amazed native turned quickly round to ſee from whence the blow came, when he was ſtill more ſurpriſed to find the goat reared upon its two hind legs, and juſt ready to make another butt at him; this appearance ſo terrified the poor Indian, that he immediately jumped into the Sea, and with the utmoſt precipitation ſwam to ſhore; it was for ſome time and with the greateſt difficulty they could perſuade him to venture on board again. It ſeems thoſe people have no braſs, copper, earthen, or in fact any kind of veſſels that will ſtand the action of fire, therefore boiling water is a thing intirely unknown to them.—The Captain having one morning invited the Queen and ſome of her attendance to breakfaſt, an Indian who accompanied her and ſeemed to be a kind of Prieſt, viewed with great attention the Urn which contained the hot water, and ſeeing a perſon turn the cock and receive ſome into the tea-pot—he alſo turn'd the cock and held his hand to catch it, received a quantity of boiling water, which affrighted and ſcalded him to ſuch a terrible degree, that he roared, ſtamped, and ſcreamed like a madman,

to ſteal whatever he could lay his hands on; the ſailors dreſſed him in a jacket and trouſers, which highly delighted him, and occaſioned him to uſe all the geſtures and antics of a monkey; at laſt he jumped overboard and ſwam to his companions. After ſome few days ſailing from this place they came to a deſert uninhabited Iſland—here the Gunner and two Sailors went aſhore—but the landing being rocky and dangerous, and a ſtrong wind raiſing with a great ſurf, they could not get the boat ſufficiently near to take them in—the Gunner and one Sailor ſwam to the ſhip, but the other remained

man, having no conception before of the effects of hot water; his noiſe and pain threw the whole company in the utmoſt conſternation, and had very near deprived the Captain of his gueſt.—Notwithſtanding they are ſkilful in the healing art, it was ſome time before his hand was cured.—As a proof of their ſkill in ſurgery, a midſhipman had run a large ſplinter in his foot, their Surgeon being abſent, they could not extract it, and the patient continued in great pain, which being obſerved by one of thoſe Indians, he called an elderly Indian to him, ſhewing the foot—This Indian immediately ſearched for a ſhell, which having found, bit it with his teeth till he had ſharpened it into a point, with which he immediately opened the part, with great dexterity extracted the ſplinter, and after healed it up by the application of ſome gum from a kind of apple-tree, and thus in two days performed a perfect cure.

on the Iſland, he was ſo apprehenſive of being drowned, that he could not be perſuaded to venture, ſaying he had rather ſtarve upon the Iſland than be buried in the waves—the Captain told him, if he did not immediately come, they muſt and would ſail without him; *Jack* ſtill declined and took his leave of the ſhip's crew, and they bid him farewell, was about departing, when the Gunner once more jumped into the Sea with the end of a rope, the other end being in the ſhip, and while the ſhip's crew were taking leave of this Comrade, the Gunner privately threw the rope over his head, by which he was immediately hauled on board, but at almoſt the expence of his life, as the fellow did not recover his ſpeech for the whole day, hanging him by the heels and application of ſalt at laſt brought him too.

In 11 degrees South Latitude, and about 165 Eaſt Longitude, are conſiderable Iſlands, inhabited by a numerous, warlike, and reſolute ſet of refractory Indians, who fight deſperate with bows and arrows; near this part is a *Volcano*, with a great number of ſmall Iſlands diſperſed and chiefly inhabited. The town of *Macaſſar* lies in Latitude 5 degrees 10 minutes South, and 117 degrees 30 minutes Eaſt Longitude, inhabited by a numerous body of the *Dutch*.

Wallis Iſland is a very conſiderable tract of uninhabited land, with Cocoa-trees, &c. Latitude 5 degrees South, Longitude 152 degrees 19 minutes Eaſt.

In Latitude 22° 27′ Lieutenant *Cook* diſcovered an inhabited Iſland, called *Oheteroa*, Longitude 150° 47′ Weſt; this is but a ſmall Iſland, not more than 13 miles in circuit, but tolerably peopled, who are luſty and well made, their arms are a kind of long lances, the ſoil not very fertile nor famous for any particular produce.

In Latitude 38° 42′ South, Longitude 181° 36′ Weſt, is *Poverty Bay*, called by the natives *Taoneroa*, or *Long Sand*; the inhabitants are unruly, ſavage, revengeful and canibals—deſtroying and eating their enemies.—In Latitude 41° 5′, Longitude 184° 30′ Weſt, near Lieutenant *Cook's* ſtraight, in *New Zealand*, are alſo a moſt barbarous ſet of ſavage Indians, who are very fond of human fleſh, and always eat with voracious appetites their enemies. Mr. *Banks* found here ſeveral baſkets with human bones, the fleſh of which the natives had juſt been feeding on. Theſe parts afford abundance of fine timber, and is very pleaſant and fertile.—At *Queen Charlotte's Sound*, Latitude 41° South, Longitude 184° 45′ Weſt, in *New Zealand*, are plenty of fine woods, in which are a great quantity of delightful ſinging birds, that are very melodious in the night, ſinging ſomewhat like our nightingales, but much finer; they begin their enchanting harmony with the ſetting ſun, nor do they ceaſe their captivating muſic until Sun-riſe—they are never heard in the day-time.

In the courſe of theſe voyages the Reader is favoured with ſeveral very accurate and curious Aſtronomical Obſervations—ſome of which are as follows: July 25, 1767, at *Otaheite* a Solar Eclipſe in Latitude 17° 30′ South—Longitude 150° Weſt,

	Hour.	min.	ſec.
The Immerſion began by true time,	6	51	50
The Emerſion by true time was,	8	1	—
The duration of the Eclipſe,	1	2	10

An account of the Tranſit of *Venus* (from Lieutenant *Cook*'s Voyage round the World) obſerved by Mr. *Banks*, Dr. *Solander*, Mr. *Green*, *&c.* at *Otaheite*, or *King George the Third's Iſland*—the Latitude of the Obſervatory was 17° 29′ 15″ South—the Longitude 149° 32′ 30″ Weſt of *Greenwich*.

☞ See more of this in the Tranſactions of the Royal Society, vol. 61, part ſecond, page 397, illuſtrated by a cut.

Saturday the third of *June*, 1769, the firſt appearance of *Venus*.

	Hours.	min.	ſec.	
On the Sun was	9	25	42	Morning,
Total Immerſion was	9	44	4	
Beginning of the Emerſion	3	14	8	Afternoon.
Total Emerſion	3	32	10	

In Latitude 38° 20′ South, and Longitude 147° 6′ Weſt, they ſaw the *Comet*—this was at *one o'clock Wedneſday morning*, 30th *Auguſt* 1769, it was firſt ſeen a little above the Horizon in the Eaſtern part of the heavens—at about half paſt four, it paſſed the Meridian, its tail ſubtended an angle of 42 degrees.

The tranſit of *Mercury*, as obſerved in Latitude 36° 48′ 5″ South — Longitude 184° 5′ Weſt, *Thurſday* 9th *November* 1769. It came on at 7 hours 20 min. 58 ſec. apparent time.

	Hours.	min.	ſec.
Total Immerſion was	12	8	58
Total Emerſion	12	9	41

The place from whence thoſe Obſervations were taken, is called *King George's Iſland*, or *Otaheite*, and is ſituated in the *Pacific Ocean*, near the tropic of *Capricorn*, in the 17th deg. of Southern Latitude; it is fifty leagues in circumference, and produces various kinds of herbage, which grows ſpontaneouſly, and different ſorts of cattle, particularly hogs, which are very numerous, and the moſt common food of the inhabitants; the coaſts abound with great variety of fiſh, and the people are particularly expert at fiſhing with hooks, which they make themſelves from a kind of ſhell reſembling mother of pearl, and with lines made of the bark of trees.

Upon their firſt arrival on the coaſt many of the natives, excited by their curioſity at the appearance of ſo uncommon a phenomenon, came to view the ſhip in their canoes, whilſt others on ſhore prepared to defend themſelves with ſtones, which they threw in great numbers; but a volley from the cannon and ſmall arms ſoon ſilenced them; and after the Captain landed, they were very peaceable. There is reaſon to think that their king, or chief, fell in this ſhort conflict, as the queen, who was one of the talleſt and moſt beautiful women in the country, ſeemed under great affliction. She reſided in the interior part of the country, and was attended by ſeveral of the natives of both ſexes, who carefully obeyed her, fearful of receiving marks of her diſpleaſure, which ſhe teſtified by the exertion of her manual powers.

The inhabitants are nearly of the ſame ſtature as the Northern Europeans; but their women are, in general, ſmall in proportion,

portion, and have not diſagreeable countenances. Their complexion borders upon a copper colour; and all the covering they wear, is formed of a kind of linen made from the bark of trees, which they rub between two ſtones till they bring it to that texture, when it reſembles in colour our brown holland. Their walk is graceful, their deportment liberal, and their behaviour to ſtrangers and to each other affable and courteous, yet they are not exempt from faults; for they are great thieves, having ſtole from us every thing they could lay hands on. They are paſſionately fond of nails, and when threwn into the Sea, they dived for them like dogs, and brought them up. They were conſtantly comparing their ſkin with the Sailors, pulling up their ſhirt-ſleeves, and opening their boſoms; at the comparative whiteneſs of which they would expreſs their ſurprize in a kind of groan.

They have a ſort of wind inſtrument reſembling a flute, formed of a reed, with three holes, with which they make a very diſagreeable noiſe, and dance in a barbarous manner to this muſic.

They dreſs their animal food upon a ſtone, which they make very hot, and which ſerves them as a kind of ſtove for all cookery. In this manner they dreſs whole pigs, after having drawn them, and eat them with great voraciouſneſs, ſitting upon the ground. They reſide in low thatched huts, over their herds of ſwine.

Here is a good harbour, which might be rendered very ſerviceable to our men of war and privateers, in caſe of hoſtilities with *Spain.*

After having remained here ſix weeks, and fixed the *Engliſh* ſtandards in different parts of the iſland, Captain *Wallace* preſented the queen with a bale of blue *Engliſh* cloth, ſuch as we make Sailors jackets of, with which ſhe ſeemed greatly pleaſed.

The Georgonian women do not lay any claim to continence, and except the Queen ſeem all to a woman addicted to promiſcuous inclinations. The following ſhort relation will ſerve to illuſtrate this. "Whilſt we lay at anchor many of the Georgonian men and women came on board of us, and among the reſt a female, who ſeemed particularly fond of our Surgeon; her huſband, however, appeared jealous of her, being handſomer than the generality of her country women; and in order to get rid of him, and enjoy the converſation of her new lover, ſhe cut away her huſband's canoe, and then came running to tell him of the accident. He immediately flew out of one of the port holes in order to recover it; and ſhe by this means,

means obtained the opportunity ſhe deſired.'

Thoſe untutored people ſhew the *Engliſh* much civility—paid them great reſpect, and did not part with them without the greateſt regret; it muſt be obſerved to the honour of Dr. *Solander*, Mr. *Banks*, and the Commodore, &c. that they treated thoſe ignorant natives with great humanity, and on firſt approaching the ſhore contrived by every means to facilitate their landing with as little blood-ſhed as poſſible.—We learn from theſe voyages that a ſimilarity of language, manners and complexion are always to be met with amongſt people inhabiting on the ſame parallels of Latitude. *Otaheite* produces nearly the ſame kind of vegetables, and the inhabitants are nearly of the ſame colour as *Madagaſcar*, as the Latitudes of both thoſe places have an affinity; and thus the moſt Northern parts of *Tartary* very much reſemble thoſe of *Scandinavia* and *Lapland*; there is a certain likeneſs even in their natural curioſities, their ſhell fiſh are of the ſame ſpecies—there is a great ſimilarity in the one, and ſubterraneous caverns of theſe two places, from whence this conſequence may with great propriety be inferred, that the ſame kind of plants and vegetables will grow and flouriſh in places how diſtant ſoever, if they are but ſituated on the ſame parallels of Latitude—a poſition well worth the attention of Naturaliſts of every denomination.

SB

It has been often conjectured that the three vaſt continents of *Europe*, *Aſia*, and *America* are ſo joined as to form but one; taking this for granted, and it will follow, that the whole four continents are united, for it is an unqueſtionable fact, that the continent of *Africa* is joined to that of *Aſia* by the *Iſthmus of Suez*, which ſome have not improbably deemed the *Goſhen* of the ancients. The Eaſtern parts alſo of *European Muſcovy* join *Aſia*, and that again in ſome very high Latitudes joins the Northern parts of *America*; from hence it ſhould ſeem, though our diſcoveries have not as yet aſcertained the fact, that there is ſomewhere a junction of the four continents; and this will ſolve the difficulty under which Hiſtorians have laboured, when attempting to account for the manner of peopling thoſe immenſe tracts of land, which by vulgar error are ſuppoſed to be ſeparated by the Ocean from other continents.

After all it is ſtill the opinion of our ableſt Geographers, that although our Adventurers have not as yet been able to diſcover a South continent, it is by no means deſpaired of, as it is generally believed there is a continent, though perhaps in higher South Latitude than we have yet penetrated.

An accurate Account of the Latitudes and Longitudes of thoſe new diſcovered Places in the Southern Hemiſphere.

	South Lat.		West Long.	
	Deg.	min.	Deg.	min.
Byron Iſland	1	13	171	40
Duke of York's Iſland	8	33	178	16
Iſland of Danger	12	30	172	10
Prince of Wales's Iſland	15	2	152	2
King George's Iſland	14	14	149	20
Coral Iſland	14	14	149	10
Iſland of Diſappointment	14	9	146	14

An Aſtronomical Account of the Appearance of the HEAVENLY BODIES *at* OTAHEITE.

THEIR longeſt day is in *December*, when the Sun riſes with them about half paſt five in the morning, and ſets at ſeven in the evening, making a day of thirteen hours and a half; their ſhorteſt day is in *June*, when the Sun riſeth about ſeven and ſets at ſix, making a day of eleven hours long; they being in the *Torrid Zone* occaſions but little variation in the length of their days. The latter end of *October*, when the Sun is withdrawing below our Horizon, which is about five o'clock in the evening, when the ſable night is ſpreading his duſk mantle over us, it is then juſt about riſing in all his beauty and ſplendor to the chearful inhabitants of *Otaheite*. Twice in the year, at twelve o'clock, they have no ſhadow, the Sun being exactly over their heads, *i. e.* in *November* and *January*, and may therefore be ſaid to have two Summers, and what is there termed Winter has much the reſemblance of our Spring, for with them Nature never puts off its fine green livery; with us the Sun, at mid-day always appears full South, but with them the greateſt part of the year, the Sun at mid-day appears full North; this phænomenon is occaſioned by their living within the *Tropics*. The Moon frequently paſſes in full luſtre exactly over their Zenith, which is never the caſe with us. The latter end of *September* the ſeven Stars or *Pleiades* riſe above our Horizon immediately after Sun ſet; but the Otaheites at that time do not ſee the *Pleiades* till near four hours after the Sun is ſet with them. But at the latter end of *November*, they can obſerve the Sun ſetting in the Weſt, and the *Pleiades* at the ſame inſtant riſing in the Eaſt, which reminds me of *Milton*'s beautiful Poem, where in the following elegant manner he deſcribes the great Deity's ſtupendous power on the fourth day of the Creation —

> Firſt in his eaſt the glorious lamp was ſeen,
> Regent of day; and all th' horizon round
> Inveſted with bright rays, jocund to run
> His longitude thro' Heaven's high road: the gray
> Dawn and the *Pleiades* before him danc'd,
> Shedding ſweet influence. Leſs bright the Moon,
> But oppoſite in level'd Weſt was ſet,
> His mirror, with full face borrowing her light
> From him; for other light ſhe needed none
> In that aſpect: and ſtill that diſtance keeps
> Till night; then in the Eaſt her turn ſhe ſhines,
> Revolv'd on Heav'n's great axle, and her reign
> With thouſand leſſer lights dividual holds,
> With thouſand thouſand ſtars! that then appear'd
> Spangling the Hemiſphere.——

P. S. By this account of *Milton*'s it ſhould ſeem the firſt Moon that appeared was at full.

And thus the beauty of a fine *Moon-light night* is finely deſcribed by *Homer*.

So when the Moon, refulgent lamp of night,
O'er Heaven's clear azure ſpreads her ſacred light;
When not a breath diſturbs the deep ſerene;
And not a cloud o'er caſts the ſolemn ſcene;
Around her throne the vivid planets roll,
And Stars unnumber'd gild the glowing pole;
O'er the dark trees a yellow verdure ſhed,
And tip with ſilver ev'ry mountain's head:
Then ſhine the vales, the rocks in proſpect riſe,
A flood of glory burſts from all the ſkies;
The conſcious ſwains, rejoicing in the ſight,
Eyes the blue vault and bleſs the uſeful light.

DISCOVERIES *near the* NORTH POLE.

TO explore the *North Pole* has been the ſanguine deſire and earneſt attempts of ſeveral great men and eminent Navigators of different nations, both of the former and preſent age.

The opinion of there being a North Weſt paſſage between the *Atlantic* and *Southern Ocean*, hath continued for more than two centuries, and though the attempts made to diſcover this paſſage have not been attended with the deſired ſucceſs, yet, in conſequence of ſuch attempts, great advantages have been received, not by the merchants only, but by the men of ſcience; it muſt be a ſatisfaction to the adventurer, though diſappointed in his principal deſign, that his labours have contributed to the improvement of Science and the advancement of Commerce, as is evident by the Whale-fiſhery; this being curious and of ſome moment, a ſmall digreſſion in a deſcription thereof may not prove unentertaining. The adjacent ſeas of *Greenland* ſeems the principal receptacle for that ſurprizing fiſh the Whale, which are caught by the *Engliſh* and *Dutch* upon this coaſt, and proves a very uſeful imploy for the ſailors. They ſet out in *March*, begin to fiſh in *May*, and give over by *Midſummer*, becauſe then the Whale begin to gender; it is alſo extreme dangerous for them to continue in this very ſevere climate after the above time, being liable to be frozen in, which has ſeveral times been the caſe with former* unfortunate Adventurers, to the loſs of many lives. Their manner of fiſhing is this; they faſten their ſhips to the ice, and as each ſhip has ſix boats, ſo two of them with twelve men are ordered out to watch the coming of the Whale; they are alſo faſtened to the ice, at a ſmall diſtance from the ſhip; as ſoon as ever they ſee him they ruſh ſwiftly upon him behind that he may not ſee the boat nor reach it with his tail: the man that is at the head of the boat darts an harping iron with all his might into the body of the fiſh, and leaves it there; to this iron there is faſtened a cord of about 270 yards long, each boat having ſeven ſuch cords, which are expeditiouſly tied one to another as occaſion requires, and as the wounded Whale runs this line out with immoderate ſwiftneſs, a man keeps continually wetting it to prevent firing. As ſoon as the Whale is ſtruck the other four boats join the two firſt against the Whale riſes, they thruſt ſharp lances into any part of him they come at. When mortally wounded, he ſpouts thro' two holes in his head to a prodigious height, vaſt quantities of blood, by which loſs he ſhortly dies.

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* Sir *Hugh Willoughby*, with ſeventy two perſons in two ſhips, were found frozen to death in the reign of King *Edward* the VIth. (diſcovered by ſome fiſhermen who came that way accidentally) in Latitude 78 degrees; after which Captain *Monk* loſt all his crew, two only lived out of ſixty four. Beſides theſe there are many more inſtances of the fatal effects of venturing too far into this ſevere climate, where the cold is ſo extreme intenſe as to occaſion ice four hundred feet thick, which extends *ad infinitum*.

A large Whale is about twenty-five yards long and near five yards high, and frequently eighteen or nineteen inches thick of fat, which yields three or four thouſand gallons of oil. The Whale has very ſtrong ſinews about the tail, with which he turns and winds himſelf as he pleaſes, and often overſets the boats and men. His tail differs from the generality of other fiſh, their tails being perpendicular as a rudder, but the tail of a Whale is horizontal, or flat with the ſurface of the water. He ſwims with wonderful ſwiftneſs, making a tract in the ſea like a large ſhip under ſail. Theſe animals are greatly tormented by a kind of lice, which ſometimes eat large holes in their bodies, and are thought to feel great pain before a ſtorm, being obſerved at ſuch a time to twiſt and tumble about in a violent manner. The Whale-bone is the gills, which conſiſts of eleven or twelve hundred pieces, moſt of them fifteen feet long and four broad; a good Whale is worth above 1000*l.* They couple as four-footed beaſts; the female has teats, and ſuckles after the manner of land animals; a young one when brought forth is nearly the ſize of a hogſhead. The Whale's throat is ſo ſtreight that there is hardly room for a man's arm to paſs.*

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* It is probable therefore, that this is not the fiſh that ſwallowed *Jonah*, and the rather, becauſe it is ſaid no Whale was ever ſeen in thoſe ſeas; it is more probable that the great fiſh ſpoken of, *Jonah* i. 17, was a Shark, which is not only a very voracious, but a very large fiſh, weighing 4000 lb. and a man has actually been found intire in the belly of a Shark.

Greenland extends from the Meridian of *London* to 50 degrees Weſt Longitude, and from 60 to 80 Degrees North Latitude. The Polar regions ſeem all cold and miſerable, very thinly inhabited, and thoſe a ſtupid, rude, barbarous kind of people; here are but few animals or vegetables. The animals are chiefly deer, bears, ſome of which are white, foxes, wild fowl and fiſh. But fiſh and fowl forſake them in the winter, at which time there is a perpetual night of three months, the Sun being all this time below their Horizon; and in their Summer they have a perpetual day of three months, the Sun during the Summer never ſets to them, but ſhines nearly as powerful, and quite as bright, at twelve o'clock at night with them, as at twelve o'clock in the day. Theſe and all parts (yet diſcovered) near the Pole, are ſubject to very thick and miſty weather, which, together with the deprivation of the Sun's light during winter, occaſions a very uncheary, melancholy gloom; ſo that their day is ſomewhat like our heavy Winter's evening juſt before the dark night comes on; a kind of owl light. The dangerous and immenſe rocks of ice ſo numerous in thoſe frozen ſeas, are occaſioned by the great and almoſt continual falls of ſnow which congeals immediately, and thus augments into a large and ſolid body of ice of an enormous[*] bulk and heighth; the bears ſometimes get upon the ice, which breaking from the ſhore, is by a gale of wind driven into the high ſeas; thus our ſhips have frequently met large fields of floating ice with ſome of thoſe famiſhed animals upon it, that bark like a hoarſe dog, and are quite ravenous with hunger; they often ſwim from one mountain to another, and feed upon dead Whales.

We learn that upon the more northern parts of a cold, miſerable, barren country, within the Polar circle, called by the *Dutch Spitzbergen*, in Latitude 81 degrees, were found a few poor half-naked, half-ſtarved, untractable people, who were very fond of eating train oil, which they preferred before gold that was offered to them; their paſſion for train oil is ſuppoſed to proceed from their often feeding upon the fleſh of the Whales, which is of an oily quality. They are very ignorant and very treacherous; bows and arrows are their weapons, in the uſe of which they are dexterous.

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[*] A great thaw has a moſt dreadful appearance, huge mountains of ice tumbling into the ſea from the top of very high rocks, with a moſt horrible noiſe, fields of ſnow and ice rolling from the vaſt declivities of ſtupendous mountains, which Nature (at the appearance of the long loſt Sun) diſſolving on every ſide, affords a pleaſing, though tremendous ſight.

They bury their dead by throwing ſome large ſtones over them, through which the dead body may be ſeen, the froſt rendering the ground too hard to dig a grave, nor have they inſtruments for the purpoſe. Although ſeveral dead bodies are thus above ground, they ſeldom if ever are offenſive, the ſharpneſs of the air preſerving them; nor are they troubled in theſe parts with any venomous animal. Theſe people, like the Indians, ſhew a great paſſion for looking-glaſſes, iron and baubles; there is ſome probability of their having ſilver mines in extreme Northern parts of *Greenland*. His Daniſh majeſty having ſome years ſince ſent out a ſhip upon a voyage of diſcoveries to the *North Pole*, which after much difficulty from the impediment of the ice, reached the northern parts of *Greenland*; the crew went on ſhore, and from the very ſulphureous ſmell that ſcented thoſe parts, they imagined the mountains muſt contain great quantities of ſulphur and fiery matter, and upon further ſearching they found a kind of ſilver ore, which they carried to *Denmark*, but it was not a very valuable ſort, as from one hundred weight thereof they could only extract twenty ounces of pure ſilver.

In high Northern Latitude they ſaw rocks of pure ſtone, finer and whiter than alabaſter,

baſter. In the year 1608, *Henry Hudſon* was ſent to diſcover the North Pole, who penetrated as far as 82 degrees, and ſaw ſeveral iſlands Northward, but ice prevented his reaching them. Thoſe few who have penetrated into very high North Latitude, ſay, the ſoil in moſt places as you draw near the Pole, is ſcarce any thing but rocks or heaps of vaſt ſtones, many of them ſo high, that the upper half ſeems to be above the clouds. The little vallies between them are filled with broken ſtones and ice heaped up for many generations: what little *flat* ground there is, is barren, having only heath, moſs, and ſome few plants, as cabbage, ſorrel, lettuce and ſcurvy-graſs; theſe are produced by the infinite quantity of wild fowls that build their neſts and dung on the top of the mountains, and in their Summer is expoſed to the Sun-beams, and is with the moſs waſhed down by the melted ſnow, and makes that manure on the ground which vegetates the above plants.

The firſt that ever ſearched for the North Weſt paſſage was Captain *Frobiſher*, in the year 1576, with two veſſels arrived to the Latitude of 62 degrees, found a great inlet of ſixty leagues in length, and main land on both ſides, called by him *Frobiſher's Straits*; he found here the black-lead ore, and upon *Smith's* Iſle was found ſeveral ſtones, out of which was extracted ſome ſmall quantity of gold; a dead fiſh was alſo found twelve foot long, ſhaped like a Porpoiſe, having a horn ſix foot long growing out of his ſnout, which is ſtill kept at *Windſor*.

It would exceed the limits of this work to relate the voyages of all thoſe who have endeavoured to explore the Polar Regions; but the laſt attempt of this kind was the latter end of the ſpring in the year 1773, when the *Carcaſs* bomb-ketch, commanded by Captain *Lutwich*, which, together with his Majeſty's ſhip the *Sea Horſe*, commanded by Captain *Phipps*, was ſent out by the Government in ſearch of diſcoveries near the Polar Regions, particularly to make *Aſtronomical Obſervations* near the North Pole, and to diſcover *a Northern paſſage* into the *Great South Sea* or *Eaſt Indies*, and altho' ſeveral very able and ſkilful adventurers of our own and different nations have attempted to navigate this difficult frigid zone, yet few have been able to penetrate ſo near the Northern Pole as our late *Engliſh* voyagers, and altho' the great impediments and dangers that occurred from the huge and amazing rocks of floating ice *, with other imminent hazards which ſeemed to multiply upon them, yet they continued their undertaking with much vigour and ſpirit, until ſuch obſtacles preſented themſelves, that to have perſevered muſt have been termed extreme raſhneſs. They continued their Northern courſe as high as 81 degrees North Latitude; they were then within the Polar Circle, being about 1800 miles northward from *London*, and within 540 miles of the North Pole. Captain *Phipps*, it ſeems, has every reaſon to believe that few, if any former voyagers, have ſailed nearer the North Pole *in that ſea*, as he found a line of ice runs in the ſame Latitude for 25 degrees of Longitude, therefore this immenſe body of ice muſt extend for 1500 miles; a moſt prodigious ſpace, which moſt probably fills the whole Sea of the Polar Region beyond that Latitude. They

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* The honourable Commodore *Phipps* had his ſquadron ſo encircled with ice off *Spitzbergen*, that they were in hourly expectation of being loſt; however,

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ever, on the opening of the ice, the various picturesque ſhapes in which the broken parts appeared, preſented a view equally entertaining as the former was horrible. One remarkable piece deſcribed a magnificent arch, ſo large and compleatly formed, that a ſloop of conſiderable burthen might have ſailed through it without lowering her maſts; another repreſented a church, with windows, pillars and domes; and a third a table, with iſicles hanging round it like the fringes of a damaſk cloth; in ſhort, a fertile imagination might have from ſuch a view, aſſimulated moſt of the beauties of art and nature.

were ſeveral times ſo embayed in the ice as to find their ſituation almoſt deſperate; from the firſt to the tenth of *Auguſt*, they were incloſed in the ice, and were happy to get back into the open ſea, after having made the ſtrongeſt efforts with the utmoſt riſk, to perform their undertaking. This, however, was far from being the only great danger Captain *Phipps's* ſhip had to encounter during the voyage, for after they were parted from Captain *Lutwich*, on the 10th of *September*, they met with a moſt violent ſtorm, which on ſo bad a coaſt as the Eaſtern ſhore, in the German Ocean, expoſed them to the moſt imminent danger, and notwithſtanding they threw four of their guns overboard, they very narrowly eſcaped foundering. Yet upon the whole of this hazardous voyage they did not ſuſtain any conſiderable loſs, the crews of both veſſels arriving in *England* in perfect health, and altho' they have miſcarried in their deſign, it was by no means owing to their want of either ſkill or reſolution.

Captain *Lutwich* brought from the coaſt of *Nova Zembla*, as preſents for his Majeſty, a large * white female Bear, and an amphibious animal, between a Fiſh and Otter, having the reſemblance of both, which was found on a * floating iſland of ice, in Latitude 81 North: theſe creatures are exceeding fierce, and were cloſely confined the whole voyage, living on any thing they could get. Amongſt the very ſingular animals that belonged to thoſe intenſe Regions, is a kind of amphibious one called the SEA HORSE; this is a ſurprizing ſea monſter, much bigger than an OX, having a ſkin like a Seal, with ſhort hair, mouthed like a Lion, and frequently ſleeps upon the ice, and oftentimes laying upon the ſhore baſking in the Sun; but their principal reſidence is in the ſea; their tails are like other fiſh, and web footed, and have four feet and no ears, and commonly have one or two young ones at a time. When the ſailors find them upon a flake of ice, with her young ones, ſhe takes her young ones in her paws and caſts them into the ſea, then jumps in after them, and takes them again into her arms and plunges up and down with them; ſometimes ſhe will throw her young from her, and make up to the boat with great fierceneſs to attack the men,

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* The coldneſs of this climate is ſaid to change the Bears to a white colour.

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* Theſe floating fields or pieces of ice are frequently more than a mile in length, and upwards of 100 feet in thickneſs, and when put in motion by a ſtorm nothing can be more terrible. The Dutch had thirteen ſhips cruſhed to pieces by them in one ſeaſon.

but their ſhouting and noiſe generally intimidates her, when ſhe returns, takes her young and ſwims off.

Nova Zembla was one of the coaſts which Captain *Lutwich* touched in his voyage of Diſcoveries, the *Dutch* call it the iſland of *Weygates*, is ſituated in the North or Frozen Sea, between 50 and 80 degrees of Eaſt Longitude, and between 70 degrees of North Latitude and the North Pole, ſeperated from the province of* *Samoieda* in *Ruſſia* by a narrow ſtrait, called the Straits of *Weygates*; whether it be an iſland or part of ſome great continent is uncertain, no ſhips having ever paſſed to the northward of it, though many attempts have been made to find out a North Eaſt paſſage to *China* that way. The *Dutch* indeed paſſed the Streights of *Weygates* on the Eaſt ſide of it in the year 1596, but did not find it practicable to ſail further for the fields of ice they met with. There are no conſtant inhabitants here, but the *Samoieds* and *Oſtiacs* climb over the mountains of ice in the Straits when they are frozen over, and hunt Elks and Rain Deer at the proper ſeaſon.

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* *Samoieda* is the moſt northerly Province of *Ruſſia* in *Europe*, ſituated on the Frozen Ocean and the River *Oby*: the inhabitants living in huts and caves under the ſnow: their only employment is hunting in the winter and fiſhing in the ſummer.

Some writers tells us, that *Nova Zembla* is the iſle of *Carambice* of the antients, from whence men may go upon the ice as far as *Greenland* and further; it has therefore been thought the people that firſt inhabited *America* went over this way.

About *Nova Zembla*, in Latitude 75 degrees, is much conſolidated ice; vaſt quantities alſo float in and out of the Tartarian or Frozen Sea, which makes the navigating thoſe parts extremely difficult. But it is the opinion of ſeveral experienced Voyagers, that by ſailing more North eaſt an entrance might be found into higher Latitudes. It was remarked by our late Adventurers with Captain *Lutwich* and Captain *Phipps*, that they found it colder, and the ice increaſe in proportion, as they heightened their Latitude, which ſeems to contradict the opinion of a more clear open ſea at the Pole.

It was obſerved by ſeveral on board the *Sea Horſe*, on ſome very fine days in *June* and *July*, that notwithſtanding the ſeverity of the climate, the Sun had ſufficient power to make the pitch and tar run down the ſides of the ſhip, which in fact is not owing ſo much to the power of the Sun, as to its long continuance above the Horizon, the Sun in thoſe parts during Summer never ſets, but continues above the Earth for more than four months together, therefore it muſt be its continuance, more than its warmth, occaſions this effect. We alſo learn by this voyage of diſcoveries, that the *Aurora Borealis*, or Northern lights, are much more luminous nearer the Pole than with us, the light emitted from them is much ſtronger than with us, glittering, darting, ſtreaming, and ſnaping in a very ſingular manner with an amazing noiſe: it is remarkable that thoſe lights are unknown to the inhabitants of the more Southern parts of our Hemiſphere; whether they are known to thoſe who inhabit the Southern *Frigid Zone*, is yet undetermined; divers are the opinions and conjectures relative to this phænomenon. Some have thought it to be a fiery matter contained in the bowels of the Earth, and iſſuing out at the North Pole in a kind of luminous vapour, which as we ſee electrical bodies, emit light in the dark, and as a proof of this hypotheſis, Dr. *Halley* proves from experiment, that there are ſome ſtreams, as inflammable ſulphureous ones, which are capable of ſo great a degree of expanſion, that they will render themſelves lighter than the air they float in, even when that fluid is as rare as it can be rendered by art, for they will riſe to the top of an exhauſted receiver. Such ſtreams or exhalations therefore, iſſuing from mines, volcanos, &c. from the ſubterraneous parts of the Earth, muſt neceſſarily aſcend toward the top of the Atmoſphere, which is to the heighth of forty-five miles. But, however rational this account may appear, in my own opinion, the effect is produced by an intire different cauſe, and which I believe to be no other than the Sun's rays reflected on the clouds from the ice and water, the ſame as we ſee a bright knife, poliſhed ſteel, or glaſs, will by the ſun or candle reflect itſelf upon the ceiling of a room, and there tremble aud dance about as you move the mirror which occaſions it; thoſe lights are generally ſeen with us in the clear evenings of Summer and Autumn, making their appearance a few hours after ſun ſet, at which time the Sun (though loſt to us) is ſhining with a ſtrong and bright luſter over the immenſe Southern ocean, and being in our North Tropick, extends his rays at this time over the Frozen Sea in the Northern Hemiſphere, and thus the ice being ſet in motion by the water, reflects bright rays above the Polar Atmoſphere; this happening at the time of our night, renders thoſe reflected rays more conſpicuous to us, and are what we term the Northern Lights.

Amongſt other diſcoveries which Captain *Lutwich* and *Phipps* were to attempt, was the cauſe of the variation of the Needle, and the ſource of the attractive powers, which perhaps (could they have penetrated ſo far) might have been found at the North Pole. The general direction of the Needle towards the Pole teaches us how to ſteer our courſe; but the * deviations from this direction which are undoubtedly ſubject to ſome law hitherto little known, will probably afford new methods, reſerved by nature for the Mariner's aſſiſtance in finding out in what point of the Globe he is. Some years ago his *Britannick* Majeſty ſent out Mr. *Halley* in a veſſel intended for the improvement of maritime knowledge. After a cruiſe in both Hemiſpheres, this great Aſtronomer traced a line upon the Globe in which all the touched needles would point due North, and their declinations increaſe in proportion to their diſtance from it; ſuch a line well aſcertained would, in a great meaſure, ſupply what is ſtill wanting for the knowledge of the Longitude at ſea; for by obſerving the declination of the Needle in any place, it would be eaſy to determine how far it lay to the Eaſt or Weſt of any particular meridian. As to the North-weſt paſſage, however unſucceſsful our late adventurers may have been, yet there are ſome men of great eminence declare, that this paſſage is known * and has been navigated, but for political reaſons kept a ſecret. But this is only conjecture, for Captain *James*, a very able navigator, declares there is no North-weſt paſſage, and his reaſons for it are theſe. There is a conſtant tide ſets into *Hudſon's Straits*, the flood coming from the Eaſtward; the ſea produces ſcarcely any fiſh, nor the ſmalleſt ſigns of it; it is covered over with ice, which, in his opinion, is generated by ſhoals and bays, and this ice would have certainly been broken and divided if there was the free ocean beyond it; for he found this the caſe in paſſing through the Straits into the Sea to the Eaſtward; and laſtly, he had obſerved that the ice drives out always to the Eaſtward at *Hudſon's Bay*; nor does he think that it would anſwer any very profitable end if ſuch a paſſage was really found out, for the multiplicity of dangerous ice and ſhoals in thoſe Latitudes make it unfit for a veſſel to try them with any valuable cargo. Beſides, he ſays to the Southward a thouſand leagues may be ſooner made than an hundred here, and with leſs hazard; and to the South about the Cape of *Good Hope*, there are fine opportunities of recruiting the ſick, whereas here there is not the ſlighteſt refreſhment to be had, and ſcarce any thing but pain and diſorder to be acquired. Nay, even if theſe ſtraits were to be freed from ice, yet would it prove of but little advantage, for the winds, which in *Auguſt* and *September* are weſterly and very turbulent, would cauſe the veſſel to be longer on her voyage than if ſhe went her common courſe. He concludes with obſerving, that from the nature of the climate, theſe northern regions, except the Whale, can afford nothing beneficial to trade: however, he very modeſtly advances theſe things only as his own private opinion, and not with a view of diſcouraging future Adventurers from trying what may be done in the ſame courſe, not doubting but the more ingenious may be crowned with greater ſucceſs than what he met with; and indeed the late voyage of diſcoveries by Captain *Phipps* and *Lutwich*, ſeems rather to incourage than diſſuade future Adventurers, as the crew of both the *Carcaſe* and *Sea Horſe*, proved very healthy during the whole voyage; ſome few only complained of cramps and pains, occaſioned by the cold, but not dangerous.

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* The Compaſs varies much more near the North Pole than in moſt other parts of the earth, which makes Dr. *Gilbert*'s rule doubtful, when he aſſerts, that were more earth is more attraction of the Compaſs happeneth by variation towards it. Now the known continents of *Aſia*, &c. muſt be unſpeakably more than at or near the Pole can be; yet here is more variation than *Japan*, *Brazil*, *Peru*, &c.

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* It hath been declared by Captain *Fox*, *Faca*, and other eminent Voyagers, that beyond Latitude 64, round that land there was inconteſtably a communication with the Weſtern Ocean.

The concluſion to which moſt who have been in queſt of this paſſage have come to, is, that it muſt be attempted due North; but fearing the extreme cold if they ſteered too near the Pole, the navigators did not ſtand off far enough from the land, and always found the ſeas ſhut up with ice. *M. de Maupertuis*, in a letter to the king of *Pruſſia*, relative to the origin of attraction and North paſſage, ſays, " I think this paſſage " muſt be attempted by the Pole itſelf, and " at the ſame time that we might hope to " make a very uſeful diſcovery for trade to " *China*, *Japan*, &c. It would alſo be a " very curious one towards gaining better " knowledge of the Globe, to learn whe" ther the point round which it turns be on " the land or in the ſea; to obſerve the " phænomena of the Load-ſtone, at the " ſource whence they ſeem to * proceed,

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* Between *Greenland* and *Norway* are ſeveral ſmall Iſlands which produce great quantities of Load-ſtone. In 60 degrees North Latitude, and northward of *China*, is the city of *Cathay*, where the load-ſtone is ſo plentiful, that there is ſtill the remains of an old palace built with load-ſtone; here the needle has no variation.

“ and to determine whether the *Aurora borealis*
“ is cauſed by a luminous matter iſſuing
“ from the Pole, or at leaſt, whether
“ the Pole be always covered with the matter
“ of theſe auroræ. I ſhall not at preſent
“ take notice of the difficulties attending
“ this voyage. The aſſiſtance which the
“ Pilot derives from his art will diminiſh
“ in proportion as the veſſel approaches the
“ Pole, and much of it will ceaſe at the
“ Pole itſelf. This fatal point might therefore
“ be avoided, but if the veſſel ſhould
“ come to it, ſhe muſt be ſuffered to drive
“ till ſhe be at ſuch a diſtance that the rules
“ of navigation may again be made uſe of.
“ I ſhall not enlarge on this head; what I
“ purpoſe is only to give a hint of ſuch diſcoveries
“ as I thought of moſt importance.
“ It will be time enough when your Majeſty
“ has determined which to proſecute
“ to concert the moſt proper methods for
“ that end; but if ſome great Prince would
“ ſend out two or three ſhips every year on
“ ſuch enterprizes, the expence would be
“ inconſiderable; and, beſides the advantages
“ reſulting from their ſucceſs, they
“ would be of great ſervice in training up
“ expert captains and pilots for all the events
“ of any voyage, and it is ſcarce poſſible
“ but that among ſo many things that remain
“ unknown on our Globe, we ſhould
“ attain to ſome very important diſcovery.”

SECTION.

The general Phænomena of the Polar Region.

SHOULD there be any conſiderable iſland or continent at the North Pole, I think it muſt be totally uninhabited, as Providence does not ſeem to have formed any human being capable of bearing*, for a continuance, the extreme ſeverity of this very intenſe climate. Beſides, here is a winter at the North Pole of ſix months, during which time (by the obliquity of the Ecliptic) the natives would be utterly deprived of the Sun, and have one compleat diſmal night of half a year, that is from *September* to *March*; after which they would have one compleat day of half a year, as the Sun would continually ſhine with them from *March* to *September*, during which time, at twelve o'clock at night, the Sun would ſhine with them as bright as twelve o'clock at noon: thoſe amazing extremes, with the intenſe cold, together with the exceſſive barrenneſs of this dreary country, plainly indicates that Providence never intended thoſe parts as a reſidence for a human, much leſs for the convenience of a commercial people.

Our harveſt Moon affords a very curious and beautiful phænomena at the North Pole; this full Moon may be ſeen near their Horizon, continually to ſhine for more than two whole days and nights together; the Sun at this time will juſt peep above the Horizon, and there continue ſhining for more than two whole days and nights ſucceſſively, after which he withdraws himſelf and takes a long farewel for ſix months, never appearing in thoſe regions during that time, which occaſions ſo great a darkneſs, that the ſtars are ſeen ſpangling the canopy of Heaven at their noon day.

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* The few animals that wander in thoſe parts during the Summer, forſake theſe ſtarving regions in Winter

In the midſt of their Summer in the Polar Regions, the Sun does not appear higher above their Horizon than it does with us in *April.* It may be neceſſary to obſerve, that the nearer we approach North Pole, the leſs will be the degrees of Longitude, this is occaſioned by the ſpheroidical figure of the Earth. Thus a Circle extending itſelf round the extreme ſwell of the Earth at the Equator, will be found to contain 360 Degrees, or 21600 Miles, whereas a Circle paſſing round the Earth, near the North Pole, will not contain a hundredth part of ſo many Miles, for the parallels of Latitude continually decreaſing the nearer we approach the Poles, it is plain, a degree upon any of them muſt be leſs than a degree upon the Equator; to make this more plain, I have annexed the following table of the number of miles, anſwering to each Degree of Longitude at every Degree of Latitude.

A TABLE,

Shewing how many Miles anſwer to a Degree of Longitude, at every Degree of Latitude.

D.L.	Miles	D.L.	Mile	D.L.	Miles	D.L.	Miles
1	59.99	24	54.81	47	40.92	69	21.50
2	59.97	25	54.38	48	40.12	70	20.52
3	59.92	26	53.95	49	39.36	71	19.54
4	59.86	27	53.46	50	38.57	72	18.55
5	59.77	28	52.97	51	37.76	73	17.54
6	59.67	29	52.47	52	36.94	74	16.53
7	59.56	30	51.96	53	36.11	75	15.52
8	59.42	31	51.43	54	35.27	76	14.51
9	59.25	32	50.88	55	34.41	77	13.50
10	50.08	33	50.32	56	33.55	78	12.48
11	58.89	34	49.74	57	32.68	79	11.45
12	58.68	35	49.15	58	31.79	80	10.42
13	58.46	36	48.54	59	30.90	81	9.38
14	58.22	37	47.92	60	30.00	82	8.35
15	57.95	38	47.28	61	29.09	83	7.32
16	57.67	39	46.62	62	28.17	84	6.28
17	57.37	40	45.95	63	27.24	85	5.23
18	57.06	41	45.28	64	26.30	86	4.18
19	56.73	42	44.59	65	25.36	87	3.14
20	56.38	43	43.88	66	24.41	88	2.09
21	56.01	44	43.16	67	23.44	89	1.05
22	55.63	45	42.43	68	22.48	90	0.00
23	55.23	46	41.68				

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